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USEFUL RECEIPTS.

Lithographic Ink.

Lithographic ink is composed of tallow 2 ounces; virgin wax 2 ounces; shell lac 2 ounces; common soap 2 ounces; lamp black ½ an ounce.

These materials are prepared in an iron saucepan with a cover. The wax and tallow are first put in and heated till they ignite; whilst they are burning the soap must be thrown in in small pieces one at a time, taking care that the first is melted before a second is put in. When all the soap is melted, the ingredients are allowed to continue burning till they are reduced one-third in volume. The shell lac is now added, and as soon as it is melted the flame must be extinguished. It is often necessary in the course of the operation to extinguish the flame and take the saucepan from the fire, to prevent the contents from boiling over; but if after the process above described any parts are not completely melted, they must be dissolved over the fire without being again ignited.

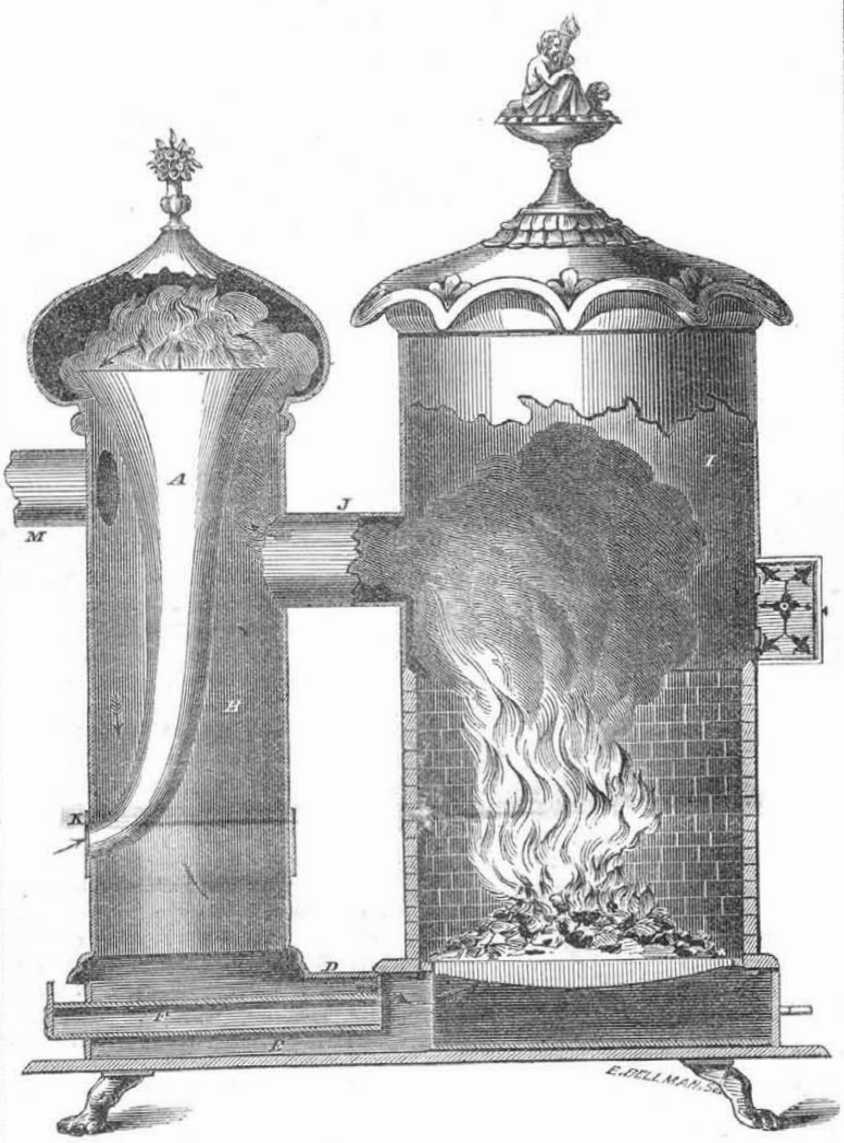
The black is now to be added, having previously mixed it with thick varnish, made by heating linseed oil till it will ignite from the flame of a piece of lighted paper, and allowing it to burn till reduced to one-half. When it is completely dissolved, the whole mass should be poured out on a marble slab, and a heavy weight laid upon it to render its texture fine.

Grafting Wax.

This is made of one pint linseed oil, six pounds rosin, one pound beeswax, the whole melted together over a slow fire.

Atmospheric Reversing Draught Furnace.

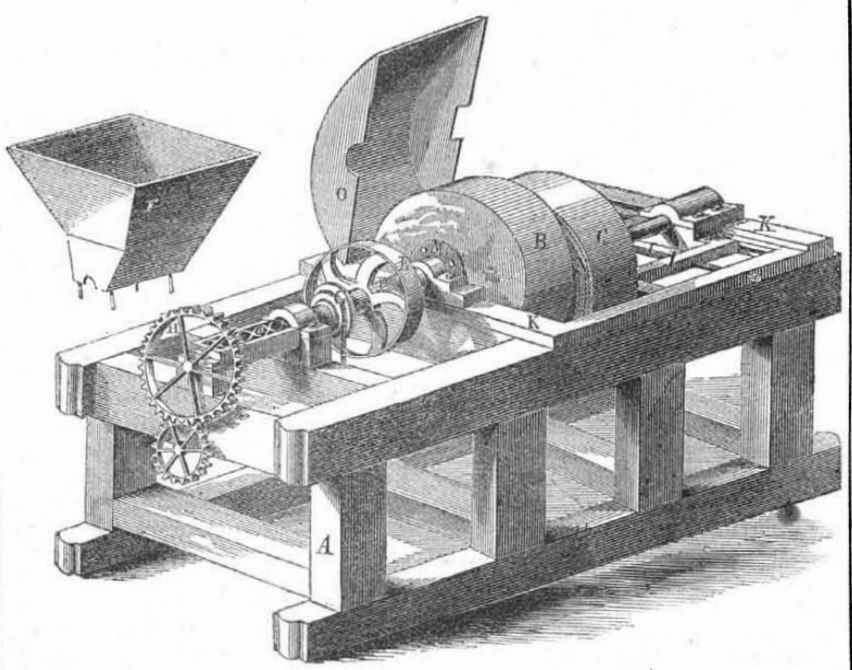
The accompanying engraving represents a vertical longitudinal section of Wm. Ennis & R. W. Fenwick's Atmospheric Reversing Draft Furnace, for which a patent was granted to the inventor, Mr. Ennis, of the firm of Keyser & Co., furnace manufacturers, this city (N. Y.) on the 29th of last month (March 1853.) The fire is shown in the furnace, I. The grate is supplied with fresh air through a back tube or channel, F, above the ash pit or pan, E. A pipe or passage, J, connects the fire chamber or stove, I, with the radiator chamber, B, in which is placed an inverted hollow cone of cast-iron, A, to deflect the fine solid particles of coal that are sometimes carried off from the fire when fresh coals are put on, and also to absorb and retain a great amount of heat, and give it out by radiation so as to economize heat; also to make a portion of air return and feed the fire along with any carbonic oxide that may escape, and thus economize fuel. The pipe, F, can be closed to regulate the feed of fresh air. The atmosphere is admitted through the hollow cone at K, and passes up as shown by the arrows, then out by pipe, M. The large part of the cone being placed near the pipe, J, compresses the smoke into a smaller space before it reaches the top, where it expands and creates a partial vacuum, thus combining the element of an artificial draft without the employment of any mechanical force to do so. This furnace, therefore, must always draw well. If applied to burn bituminous coal, from which much volatile matter escapes, the supply of fresh air by the hollow cone, if any flame passes up, will saturate the gas with air so as to render it combustible, and burn, and thus this stove will be a smoke consuming one, well adapted for all places where they burn bituminous coal. The arrows show the



reversing draft of heated air to support combustion when F is closed; a good arrangement.

More information about rights and furnaces may be obtained by letter addressed to Wm. Ennis & R. W. Fenwick, at the furnace manufactory of Messrs. Keyser & Co., 398 Broadway, N. Y.

IMPROVED GRINDING MILL.



The annexed engraving is a perspective view of an improved grinding mill, invented by Listman & Lawmaster, Syracuse, N. Y.

A is the main frame; B is the driving stone hung on shaft, D, to which pulley, E, is attached, and which is set in motion by a steam engine or water wheel; C is the other stone driven by the one, B, the space between being filled with grain, which keeps them in contact. The feed is supplied through shaft D; there is another pulley underneath (unseen,) similar to the upper; the upper gives motion to the lower one, which has a pinion on its spindle that gears into the wheel, H, and moves it; this wheel turns the conveyer, *a*. The two pulleys are constructed so as to increase or diminish the motion of the wheel, H, for regulating the supply to the conveyer. Both stones run one way, and not in opposite directions, and by changing the conveyer to one with an opposite thread, both can be run backwards with the same effect without any alteration of the dress. The centres of the two stones are not exactly opposite to one another; this causes them to cut instead of crushing the grain; I is a shipper for moving the stone, C, to the one side or the other, more or less distant. The shipper slides on a cast-iron frame, K K, and is moved when required by turning the screw, L. This shipper is put into the frame before it is bolted together. There is a screw (not shown) to set the stone; by it, provision is made to keep the two stones together; M is an iron flange secured on shaft, D, to which the stone, B, is fastened; the stone, C, is balanced on its shaft with a similar flange; N shows part of the dressing of the stone; O is the cover or lid for covering the stones. The grain after being discharged from the stones can be taken out from the end of the frame by a conveyer placed on the bottom of the box, and driven by the shaft wheels, or it may be let down into a lower story and carried up by an elevator. The hopper, F, is shown apart from the mill, but is placed above the hollow shaft or conveyer, *a*, over which it is placed to receive the grain when the mill is at work. This mill is well adapted for grinding wheat for farina. It is also well adapted for grinding paints, saleratus, &c., and it works with a great economy of power. This mill is employed with great success by Messrs. Listman & Lawmaster, it being capable, they state, of grinding a greater variety of substances, in a superior manner, than any grinding mill in common use.

More information may be obtained by letter addressed to these gentlemen at Syracuse.

Naples Yellow.

This fine color, used in oil-painting and for porcelain and enamel, is prepared in Italy by a secret process. Dr. Ure gives the following recipe:—12 parts of metallic antimony are to be calcined in a reverberatory furnace with 8 parts of red lead and 4 parts of oxide of zinc; the mixed oxides are to be fused, and the mass then triturated and elutriated in o a fine powder. Many of the purposes for which Naples yellow was formerly applied, are now supplied by chromate of lead.

Death of the Vice President.

William Rufus King, our elected Vice President, died at his residence in Alabama, after a long illness, on the 18th inst. He went to Cuba in search of health after he was elected, and a bill was passed by Congress for him to take the oaths of his office in Cuba. He sensibly declined to do so; he felt that his days were few, and that if he recovered he could be installed into office at the seat of government. He was an upright, able man, and for forty years in public life.

We have seen it stated in a number of our exchanges that W. J. McAlpine, the present worthy and able State Engineer, N. Y., is about to resign and become chief engineer of the New York and Erie Railroad. It is also reported that George Cole, C. E., is to succeed Mr. McAlpine.

A survey is about to be made for a railroad from Hoboken to the central parts of New York State, in order to open up railway communications between some of the southern New York counties and the sea board.

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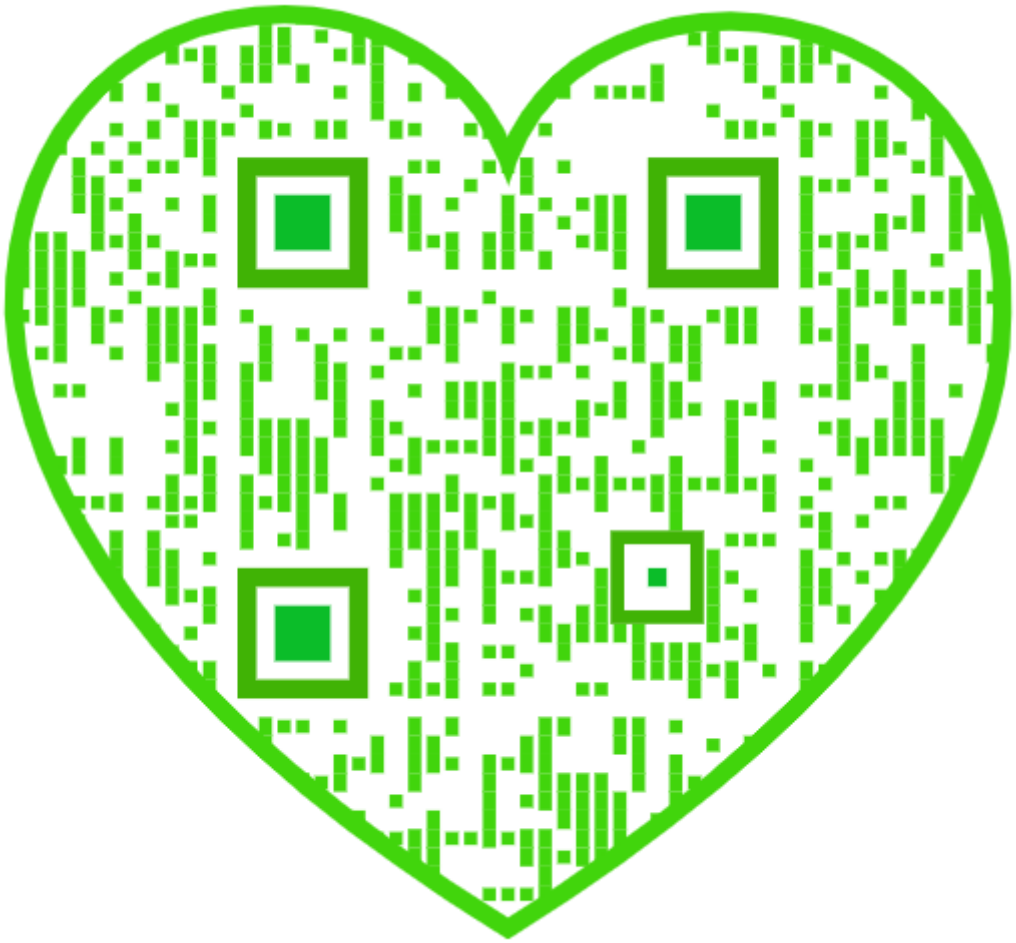

MISCELLANEOUS.

Bain, the Inventor of the Chemical Telegraph.

Alexander Bain, so well known in this country as the inventor of the Chemical Telegraph, has recently failed in England, and has applied for a discharge in the Court of Bankruptcy. His debts to unsecured creditors amounted to £8,044, to others holding security, £3,628, amounting to about $58,000. His available assets amounted to £40 in good debts, and £892 in property; the property of his patents was also given up, amounting to a large sum, according to the inventor's estimate, such as his Electric Clock patent, a patent Ship Log, and his Chemical Telegraph; he has patents for his Electric Clock for France, Belgium, and England, and his Chemical Telegraph has been patented in all the civilized countries in the world.

Upon the examination, Mr. Bain made a statement of his history as an inventor. He was a clock-maker by trade, and belonged to John O'Groats, in the North of Scotland, which place he left and came to England in 1837. His attention was soon directed to the application of moving clocks, by electricity, and he soon devised a plan for moving all the clocks in the kingdom by one clock connected with the Royal Observatory at Greenwich, to keep true Greenwich time, and he also applied his principle to common clocks, only his required no winding. He obtained his first patent in 1841, and a second and third one for Electric Clocks and Telegraphs in 1843. He also, at this time, invented a telegraph to print the common alphabet, which was made public property. In 1846 he joined the Electric Telegraph Company in London, against whom he had instituted proceedings for an infringement of his patent. His patent was purchased by them for £7,500 and a contingent sum of £2,500. In 1846 he obtained a patent for his Electro-Chemical Telegraph, which, he says, "is an invention surpassing all others in the speed of transmitting messages, and the Electric Company, appreciating its value, purchased the right for Britain, Ireland, and the Colonies for £13,250, one half to be paid in cash and the other half in shares of the company." A portion of the cash he received, but in 1848 a compromise was made and he received back all his patents, some of which are now working successfully on the best lines in England. In that year, 1848, he came to the United States for the purpose of obtaining patents and selling his invention. His Chemical Telegraph was open to the press here the week after his arrival; we visited it, and at our own expense, knowing it was a subject of interest, published an engraving of it on page 273, Vol. 3, Scientific American.

From an examination of this Telegraph we became satisfied that it was entirely different in essence and principle from the Electro-Magnet Telegraph, or any other ever exhibited in our country. Mr. Bain made application for a patent, and was rejected, upon the grounds that it interfered with a caveat of Prof. Morse, filed in the Patent Office. We gave the subject great care and attention, and came to the conclusion, that obstructions of an illegal character were placed in the way of this stranger inventor by some in the Patent Office, whose personal and interested feelings led them to act like persecutors, rather than judges, to do justice alike to every applicant for a patent. Since then, from a knowledge of Prof. Morse's Chemical Telegraph, which is not worth a single straw, and which cannot operate as a telegraph at all, that is as it is represented in his drawings, we humbly believe that the Chemical Telegraph of Prof. Morse was set up merely to blockade the path of another rival Telegraph. The Patent Office decided against Mr. Bain, and refused to grant him a patent; he appealed to Judge Cranch, and was successful. The Patent Office was ordered to grant the Patent for the Chemical Telegraph, and shortly after this he sold his first patent right (U. S) to Messrs. Rogers, Barwain & Lea, of Baltimore, who established a line of the Chemical Telegraph between Philadelphia and Baltimore. This was the Company against whom an injunction was sought by the proprietors of Morse's patent, for infringing on the Electro-Magnet Telegraph, in which case Judge Kane made that decision, which our readers well know we have spoken against as illegal and wrong in every sense. An appeal was to have been taken to the U. S. Supreme Court, but the Company of Messrs. Rogers & Co., made a compromise for their own benefit, but much to the injury of the interests of the inventor. Six lines have been established in our country, worked by the Bain Chemical Telegraph. Mr. Lefferts, of this city, we believe, owns most of Mr. Bain's rights. We suppose that he obtained considerable money for his patent, but the expense to which he was subjected by unjust opposition must have been enormous,—we have looked upon him as an injured man. We would not say so unless we were convinced of this. His Patent Agent was Mr. Serrell, of this city (now deceased), an old and respectable citizen. We have never had any business transaction with Mr. Bain, and spoke to him only a few times, and our conversations were but short. When he first arrived here we formed a high opinion of his abilities as an inventor, and excellent machinist. His inventive faculties were high, and his hands could execute what his head designed. From being so much harrassed and persecuted, we observed, before he left New York last, that a great change had taken place in his appearance since 1848. We were sorry to observe it; we would not like to be in the place of some of those who did so much to injure his interests—our conscience could not feel at ease. He is now poor, and according to the ways of the world, he will find few to say a word in his case, since there is no money in his purse to pay for it. His inventions, however, will carry his name down to the end of time, and his fac-simile telegraph may yet be so improved as to supersede all others.

These remarks have been dictated by a sense of our duty to inventors, based upon the principles of justice and truth. No personal considerations ever prompted us to say a word in his favor, nor one against those who opposed him: the Scientific American is not conducted to carry out such feelings, and never has exhibited them. Independent and free to speak at all times on every question of interest to science and inventors, we speak the truth right out as we believe it, whether for rich or poor, friend or stranger, and abide the result, confident in "honesty being the best policy."

Berdan's Gold Crushing Machine.

Experiments have lately been made with the above machine, which leave no doubt of its superiority for obtaining the greatest amount of gold from a given quantity of quartz. These experiments have been conducted at the Novelty Iron Works in this city, and the working of the machine has fully borne out its character for efficiency and economic results. A public trial of its capabilities of performance, was made last week at the above-mentioned establishment, under what may be called the most disadvantageous circumstances which resulted in a perfect success. The experiment was made with the refuse from the workings of the Gold Hill Mining Co., in North Carolina, which are technically called "tailings," and thrown aside as worthless, after all the gold has been or is supposed to have been extracted. With some of these "tailings," large quantities of which have been bought up, we understand, by parties in Boston for further extraction of the remaining gold, the efficacy of Berdan's machine was tested. The quantity of "tailings" experimented with was two barrels, weighing together about 100 lbs., and to these were added about 10 lbs., or rather more of quicksilver, the processes of pulverizing and amalgamation being carried on together, which will be understood by referring to page 35 of the present volume of the Scientific American, where the machine will be found illustrated, with accompanying letter-press explaining its mechanism and method of operation. The proceeds were 58 dwts. 1 gr. of gold, but as the experiment was done very roughly, a deduction must be made for impurities which would be thrown off on refining; these, however, on examination of the specimen, we should conclude will not amount to much; at all events it proves decidedly that the refuse of the above named mine is worth being washed over again, the weight of gold obtained from the above quantity of "tailings" being sufficient to amply reward for the expense and labor in extracting it. A second experiment of crushing the quartz as well as pulverizing it, was afterwards made, 70 lbs. of gold-bearing quartz, from a mine in Rutherford Co., in the same State, being operated upon; in this instance the product was very small and mixed with inferior metal, bearing no comparison with the results obtained by the first experiment. We will not vouch for its accuracy, but it was publicly mentioned, during the experiment, that the per centage of precious metal obtained from these "tailings" was greater than that obtained at first from the original quartz. Whether this is the case or not can be easily ascertained, the quantity obtained by the above experiment being known, and the quantity obtained from a given quantity of quartz by the Gold Hill Mining Co. being compared with the former.

Patent Cases—Hook-Headed Spike.

For a long time a keen litigation has been going on between Henry Burden of the Troy Iron and Nail Factory, and Corning, Winslow & Horner, of the Albany Iron and Nail Works, respecting the infringement of Burden's patent for making hook-headed spikes by machinery. Burden's first patent was dated in 1840. In 1842 he brought a suit against Corning, Winslow & Horner, for violating said patent, which suit resulted in a verdict of $700. A motion for a new trial having been overruled, the verdict was carried into a final judgment against the defendants. In 1848 having reason to believe that Messrs. Corning, Winslow & Horner continued to use his patent, Burden brought a suit, and filed a bill for a perpetual injunction and damages, in the United States Circuit Court for the Northern District of New York.

The validity of the patent was again sustained, but the injunction was not granted, the defendants alleging that they had a license to manufacture. Burden appealed to the U. S. Supreme Court, and prayed "that the Court would enjoin the defendants, Corning, Horner & Winslow, their attorneys, and agents, and workmen, to desist from making, using, or vending any machine, containing the improvements for which letters patent were granted to Burden on the 2nd of September, 1840, and from selling or using any spikes which they then had on hand, which had been manufactured by their machines, containing the improvements of that patent; and that an account of the profits which they have derived from the use of such patented improvements, should be made."

The Court, in giving their decision, say that the license, permit, or instrument set up by the defendants, in their answer and defence, and under which they claimed to manufacture, was not a license; and touching the other allegations in the bill, the Court say they were all "either proved or admitted by the answer of the defendants." "In every point of view," says the Court, "which we can take of this case, we think that the defendants have infringed the patent for making hook or brad-headed spikes, with Burden's bending lever. We shall direct the decree of the Court below to be reversed, and shall order a perpetual injunction, to enjoin the defendants from using the machine with Burden's bending lever in the manufacture of brad headed spikes, and shall remand the case to the court below, with directions for an account to be taken, as prayed for by the appellants."

This case having been remanded to the Court below (the U. S. Court of the Northern District of New York) it becomes the duty of this Court, without discretion, to execute the injunction and decree of the highest court in the land. At its next term, probably in June next, there will be an examiner or commissioner appointed, to enforce the injunction, and examine into the profits made by Corning, Winslow & Horner, by the use of Burden's patent, and the amount of "damage sustained by Burden, in consequence of the unjust and unlawful violation and infringement by the defendants."

Brick Press.—In this city on Saturday (23rd) in the U. S. Circuit Court, Judge Nelson presiding, a verdict was given in favor of Alfred Hall, vs. J. Strang, for the infringement of a patent for making bricks. The verdict was $1,000 damages.

The trial of a similar suit against Daniel Weed was commenced.

The People's College.

A meeting of the "People's College Association" met in the City of Brooklyn, on Wednesday last week, for the purpose of transacting business. We have more than once directed the attention of our people to this project. It is a laudable one in every sense of the term, and should receive the support and assistance of those who are possessed of means to establish it on a firm and secure basis. "The People's College" was chartered by our Legislature at its last session, and measures will soon be matured by its Trustees for an appeal to the people of this State for establishing the College at an early day. We want to see our farmers, mechanics, and artisans elevated above their present position in society, and they never will be unless some means are provided like this People's College for the better education of our "working youth;" that is, those whose occupations embrace much manual toil. The safety of the property of the rich is dependent upon an intelligent and virtuous population. Every scheme like this, therefore, should receive the countenance and encouragement of those who have means to devote to such objects, namely, to take stock in such a laudable scheme. The education is to be thorough in chemistry, engineering, and all the useful branches. Many small countries in Europe greatly surpass ours in effective institutions of useful learning, this should not be, for our liberties and progress, depend on the energy, virtue, and intelligence of our people; let our people then, have a People's College.

Deaths in the City Prison.

Five men were put into one of the cells in our City Prison last week in a state of intoxication, and four of them died. The cell was examined and the doctor reported that it was healthy, and that the state of the prisoners, not the cell, had everything to do with their deaths. Others did not think that the report of the doctor was correct, but believed that the state of the cell was accessory to their deaths. An exchange has the following on the subject:—

"Yesterday, the District Attorney, accompanied by Dr. Chilton, the eminent chemist, visited that prison, and tested the condition of the cell in which the unfortunate men were confined. Upon examination, they discovered the presence of carbonic acid gas, of sufficient strength to set on fire a liquid which was placed on the floor of the cell. The whole affair has been placed in the hands of the Grand Jury, who will probably remain in session until to-morrow morning. In the meantime, Dr. Covil and Dr. Chilton will be summoned before the inquest, and some action will be taken respecting the erection of a prison in a more healthy part of the city. The action of the Grand Jury in the matter will be given in their presentment."

How the carbonic acid gas could have set fire to any liquid whatever is more than we can divine. The discovery that carbonic gas can set fire to a liquid is one of the wonders of the age, as carbonic acid gas extinguishes fire.

On the next day after which the above extract appeared the same paper said in reference to the same matter, that "when a stone of the floor was raised a stream of carbonic acid gas which had been generated underneath rushed out and extinguished the flame of some alcohol." No apology was made for the first blunder. In all likelihood the gas was either carburetted or sulpho-carburetted hydrogen generated below the prison which stands on the site of an old pond.

Death of an Eminent Chemist.

Dr. Lewis C. Beck died at Albany, N. Y. on the 21st inst. He was professor of Chemistry in the Albany Medical College. He was a good chemist and a gentleman in every sense of the term.

The Prussian Minister of war has approved of a proposal to educate a certain number of officers and soldiers from every regiment, as engineers, in order that they may be enabled to work locomotive engines.

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Cincinnati Steam Fire Engine.

MESSRS. EDITORS—A great deal has been published here and elsewhere on the subject of our steam fire engine, which is absolute nonsense. And inferences unfavorable to the inventor have been made on account of the wide-spread destruction of two conflagrations here, which took place recently. In one of them it was stated that upwards of twenty buildings were burned np; in the other, three buildings were destroyed, which rendered it obvious to the writer of this article that the affair was a humbug purely. In the article you published, April 9, 1853, taken I believe from the "Enquirer," it is supposed "that it is impossible to get the engine to fires without cutting up the streets and destroying the bouldering."

I desire to set you right, regarding the steam fire engine as a machine which must soon supersede the ordinary apparatus for extinguishing fires, and will therefore state a few things which ought to remove any prejudice that may have originated from such statements. The steam engine has never torn up the bouldered streets of our city. These are of late construction, and extend over but a small portion of the city, although we contemplate them finally to supersede the ordinary paving. This last is of the common limestone, an extremely friable material, which wears into holes, the adjacent paving readily wearing out under any heavy pressure, such as log wheels or the steam engine, for example. The introduction of a pay fire department here has been nearly contemporaneous with the introduction of the steam fire engine, and the ill feeling with which certain companies, not then brought under the new arrangement, regarded the change, hindered prompt attendance and hearty co-operation at these fires.

As to the twenty frame buildings destroyed, no one here regards their destruction as a loss, and if they had been, a group of twenty frame buildings in proximity to each other anywhere, would doom them to the flames.

I expect to obtain from the ingenious inventor of the engine, Abel Sharok, and from our city fire engineer, Mr. Bray, such a statement of the character, capacity, construction, and practical workings of the machine as will set the public, outside of Cincinnati, right upon this subject. CHARLES CIST.

Cincinnati, April 19, 1853.

[For the Scientific American.]

To File Saws—Niagara Falls Power.

The following plan of filing and setting a cross-cut saw is original, I believe, and may be of use to some of your readers. From the saw, as commonly used, remove every third tooth, file the side of each tooth next this space, perpendicular, the back at an angle of 45°; set the first two fronting on open space on one side, the next two on the other, alternately. The saw is now like a cross-cut tenon saw except that it cuts both ways, with the advantage that one half of the teeth prevent the other half from griping; it runs smooth and cuts fast.

Since reading your remarks on the water power of Niagara Falls, I would suggest the following idea:—suppose the erection on the bank of the river of one of Parker's latest patent direct-action water wheels, and also the erection of a range of factories a mile in length; an iron penstock 5 feet in diameter an inch thick, hooped with forge iron an inch thick, would bear 200 feet head (130 would be all that would be needed); from a drum 12 feet in diameter on the shaft of said wheel, through said range of factories, over another of the same size, let there be placed (its weight properly supported) a wire rope or band an inch and an eighth in diameter, which would be slower than the working speed of the surface of the drum on said wheel; this rope, under a strain of 10 tons (it is said that it will bear thirty tons dead weight) would transmit 625 horse-power to the whole range of factories. This plan carried out would allow, notwithstanding its concentration, a vast amount of the water-power of Niagara Falls, to be applied usefully and economically.

Hackettstown, N. J. C. J. D.

In the Sandwich Islands they are turning their attention to the growth of wool.

Recent Foreign Inventions.

PURIFYING OIL.—J. P. Wilson, of London, patentee.—This improvement consists in depriving oleic acid of its objectionable smell, so as to render it fit for preparing wool for manufacturing. (He is evidently not acquainted with the American invention of using steam for the same purpose.) The bad odor of the oleic acid is dispelled by heating it in a vessel heated with high pressure steam, and kept at a temperature of 400° Fah., for about two hours. It is afterwards cooled down by the introduction of cold water, when it is fit for use.

ANOTHER OF THE SAME.—George Hutchinson, of Glasgow, patentee.—This invention consists in imparting additional fluidity to lard or tallow oil, or other oils of a naturally viscid character by combining them with chloric ether, so as to give them a character resembling sperm oil. The chloric is found to produce the best effect when used in the proportion of one part to two parts by measure of neutral tallow oil.

REFINING SUGAR.—John McIntosh, of Surry, patentee.—The improvement consists in placing evaporating pans used in the concencentration of saccharine fluids in rooms, the air of which is heated to such a temperature as will evaporate the fluid. A current of air is made to circulate through the room, so as to carry off the vapors as the saccharine fluids are raised by endless bands passing over and under rollers in and above the pans, to expose an extended surface to the action of the heated air. This is nearly the same kind of an invention as that recently secured by Mr. Bessemer, of London, in this country, the claims of whose patents were recently published in our columns.

INDIA RUBBER AND COAL TAR.—Mr. C. Goodyear, of this city, has recently taken out a patent in England, for a new compound, composed of india rubber and coal tar vulcanized with sulphur. Coal tar is heated in an open boiler until it acquires the consistency of melted rosin, when it is mixed with india rubber, in proportions which may vary according to the character of the material to be produced for a specific purpose. It is mixed with sulphur and then heated to vulcanize it.

INDIA RUBBER TEETH—This article, in the form of purified white india rubber, has been patented in England, for making artificial teeth, gums, and palates. By its adoption many advantages hitherto impossible to be attained, have been introduced. The adhesion is complete, it can be moulded with perfection, to suit every inequality of the gums and teeth, and supplies an artificial periosteum, as it were, to the teeth, when become painful by the wasting away of the gum, added to these is the elasticity of the material, which completely obviates the inconveniences that arise from any motion with artificial teeth as made by other means.

[Condensed and selected from the "London Expositor," "Mechanics' Magazine," "Artisan," "Repertory of Inventions," and "Genie Industriel," Paris.

Silvered Glass.

In our last number we noticed the alleged improvement of the Rev. M. Hill, for making silvered glass, and referred to previous notices in our columns, so that all our readers might refer to them, and see that we stated the exact truth. By the latest arrivals of our foreign exchanges we select the following up on the very subject we alluded to last week. It is taken from the London Weekly Times:

"Among the many striking novelties in decorative art which were displayed at the Crystal Palace in Hyde park, there were few more appropriate to the character of that marvellous structure, or more brilliant and effective in themselves, than the specimens of silvered glass in vases, goblets, epergnes, candelabras, wine-coolers, salts, tazzas, inkstands, &c., which were exhibited by Messrs. Hale, Thomson, and Co., and to which we on more than one occasion called the attention of our readers. The gorgeousness and novelty of this beautiful art manufacture, far surpassing anything of the kind in richness of tints, purity and delicacy of material, and elegant appropriateness of form, rendered it in a short time one of the most favorite ornaments of the drawing room and dining room. The difficulties that presented themselves in the early stage of this unique manufacture, were such that the price was proportionately high, and objects of silvered glass could only be procured by those to whom cost was of little importance. Recently, however, these difficulties have been to a great degree overcome, and we understand that the price of these articles is now so considerably reduced that they may be said to be accessible to all lovers of the beautiful in art.

But the value of the discovery will not, we find, be bounded by useful elegancies alone, since it is applicable to objects of more practi cable utility. It has long been admitted that for surgeons' speculæ, for railway reflectors, for carriages, ships, light houses, and reading lamps, the silvered mirrors far exceed in brilliancy and permanency any others yet invented, and now that the price has been reduced, in some instances, we understand, as much as two hundred per cent., so as to make them generally available for such purposes, the use of silvered reflectors is become almost universal. The patentees have already received extensive orders for the United States, forty of the largest size being destined for the illumination of Fremont Hall, a public building erected on a grander scale than any this country can boast of. The fitness of these reflectors for marine purposes is being fully recognized by the Admiralty, whose example is followed by the Ordnance and other governmental boards, with results which the fogs prevailing at this season have helped to render remarkably conspicuous."

American Madder.

"The experiments which have of late been made with home-grown madder," says the "Lowell Journal," "have proved that, when properly treated, American is equal to the best French madder. Like Turkey, Dutch or Alsace madders, the American requires the addition of a little chalk to produce the best effects. During the past winter, the Merrimack Company have used, with great success, some madder grown in Montague, Franklin Co., Mass., and are now about to dye some calico with this Massachusetts madder, to be exhibited at the New York Crystal Palace.—Within a few days the Merrimack Company have received a small sample of madder grown in Georgia, which proves to be an excellent article—quite equal to that of Massachusetts. We have been informed that there grows wild, in Florida a plant, whose roots, when eaten by hogs, colors their bones red. Such is the effect of madder. Doubtless this is an indigenous species, whose cultivation would richly reward the planter. It is hoped that samples of this 'Pinkroot,' as it is termed in Florida, may be forwarded to Lowell for trial in dyeing. It is very desirable to determine whether it is madder requiring the peculiar treatment of all madders, (except the Avignon,) to produce the fullest, fattest, and most brilliant colors."

Cast-Iron Houses.

Bogardus & Hoppin, corner of Centre and Duane sts., this city, are engaged at present, in constructing for the corporation a large iron tower for a fire alarm bell to be erected on a lot in McDougal near the corner of Spring street. It will be similar to the one erected by the same firm in 1851, on Thirty-third street, measuring nearly one hundred feet in height by 20 feet diameter. They have also ready an highly ornamental front of six stories in height, and fifty feet in width, for the Messrs. Tatham, to be erected on the lot near the old church in Beekman street. Also, a front of five stories, and twenty-five feet wide, for Messrs. Hopkins & Bros., to be placed next the Grocers' Bank, in Barclay st. and one of similar design for Broadway. These fronts are unique and attractive in their design, and will do much towards introducing a new feature of house building in this city, which will improve the appearance of our streets by breaking the monotony of the brown stone and brick fronts.

Supreme Court—United States.

The Supreme Court of the United States, at its session of 1853, has decided the following points:—

1. Copy Right—A sale by the Sheriff of an engraved plate of a map, does not convey the copy-right. This is not a subject of a levy on an execution.

2. Patents—Any person has a right to demand a copy of a patent from the Commissioners of Patents, on a tender of the fee required by law; and an action will be sustained against the officer who refuses it. The officer is not, however, compelled to comply with such a demand when accompanied with personal insult and abuse; but if another demand be made by the same party in a proper manner, the officer cannot withhold a copy till an apology be made for the prior insult. Ill temper and bad manners do not work a forfeiture of a man's civil rights (even if he be uncivil.) [Case of Bayden, vs. Burke.]

3. Collisions at Sea—In case of accidental collisions at sea, when neither is in fault, each party bears his own loss. [Case of ship Washington vs. Mary Francis.]

Submarine Telegraph.

In a lecture delivered at Belfast, a few days ago, Mr. J. B. Lindsay showed that much yet remained to be done in the beautiful applications of science to telegraphic purposes. Mr. Lindsay said that he had recently instituted a series of experiments with the view of testing an idea that he had formed some fifteen years ago,—that no submarine wires are necessary for the transmission of electricity. In explanation of this principle, he said:—"I shall localize the case, in order to render it intelligible. Suppose a wire connected with the copper end of the battery to be led down to the shore, and connected with a sheet of metal laid in the river. Suppose a wire from the zinc end taken to Broughty Ferry, and soldered to a metallic plate placed also in the river. Suppose similar plates laid in the river on the Fife side, at Newport and South Ferry, and these joined by a wire having in its course one or more telegraphs.—Suppose now that a charge of electricity is sent through the wire on the Dundee side, this current may make its circuit from the copper to the zinc either by leaping four miles through the water from Broughty Ferry to Dundee, or by a leap of two miles across the river to the other wire at South Ferry, and another leap of two miles from Newport to Dundee. In such a case, I have found that part of the electricity does not go across, and part of it does; but the part of it that does go across is sufficient to work one or ten thousand telegraphs."—[Ex.

The same facts as those set forth above were presented in the October number of the "Edinburgh Review" for 1849. Experiments were also made by Mr. Thomas Taylor, formerly of this city, now of Boston, two years ago down at the Narrows in sending the electric current through part of the sea without a wire. We have had a diagram of his plan, and an account of his experiments in our possession for more than a twelvemonth. It is impossible to employ fresh water lakes as an electric medium, but salt water answers very well.

Disastrous Wreck.

The steamship Independence, running on the Pacific, was wrecked on the shoals of Margaretta Island, on the 16th of February, and 140 passengers lost their lives. After striking she was run on the beach 300 yards from shore, where she took fire and was totally consumed. The scene was terrific, as the surf was sweeping out from land. Most of those who lost their lives were from the Eastern States.

The herb ægilops, hitherto considered as worse than useless, grows abundantly on the shores of the Mediterranean. It produces a species of grain resembling wheat in form, but much smaller. By a few years' cultivation this weed has been perfected into an excellent wheat.

The human voice has been heard across the Straits of Giberalta, a distance of more than ten miles. This only happens in peculiar states of the weather. The sound of a military band has been heard at a distance of seventy miles on a clear frosty morning.

The "Edinburgh Scotsman" says that the Earl of Ellesmore has been appointed her Majesty's commissioner to attend the great exhibition at New York.

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NEW INVENTIONS.

Omnibus Register.

F. O. Deschamps, of Philadelphia, Pa., has taken measures to secure a patent for improvements in the above. The machine, as its name imports, is an apparatus for registering the fares paid by passengers in omnibuses. Its mechanism is contained entirely within a case having in front the exterior dial plate, behind which are three revolving dials. Of these the first is upon the same axis as the external pointer, and is divided like the outer dial, which latter has three apertures, so that when a secret slide is withdrawn, it is possible to see one number on each of the three concealed dials, and the sum of these three numbers denotes the amount of passengers since the commencement of the registering. Between the outer dial and the inner ones is the secret slide, whose office has just been denoted, this rests upon the axles of the concealed dials, and is attached to the bolt of a lock so that it cannot be moved unless by a suitable key. The axle of the first inner dial and the external pointer, receive motion to register the fares, and a hammer strikes a bell previously to each registration, which process is effected in a manner indicated in a former patent, but further improved in this, so that to operate the apparatus, it is merely necessary for the driver to pull a handle. The second interior dial moves one division for each revolution of the first, and to do this promptly is a desideratum; it is effected by a vertical rod acted on by a stud connected to the first dial, and its action is rendered instantaneous and certain by springs and pawls. The third dial is moved by attaching to it a wheel having a series of notches, in which gears the single tooth that is in the periphery of the wheel pertaining to the second dial. The difficulty of successfully tampering with the apparatus is increased by the following check, which serves to register the revolutions of the first dial. A number of balls are placed in a pipe, which are successively allowed to descend into a drawer in accordance with the revolutions of the dial. The machine is rendered inoperative (whenever the secret slide is withdrawn) by a slide bar, which is attached to the lock-bolt, coming in contact with the teeth of the driving wheel.

New Carriage Spring.

A carriage spring of a novel construction by which the vehicle is allowed to have a free and easy vertical motion, and at the same time prevented from any side-swinging, has been invented by Nelson N. Titus, of Cherry Valley, N. Y., who has taken measures to secure a patent. It consists of a spiral spring wound round a spindle that passes vertically through a barrel, in which the spring is encased, and likewise through a drum on which the straps, by which the apparatus is connected with the carriage, are secured, the spring and its attachments thus serving to sustain the carriage, and regulate its action according to the burden. To effect this latter purpose the spindle is made square at the lower end to which a key can be fitted for winding up the spring, so that its tension may be proportional with the weight that it has to support. The spring is likewise kept to its required position by means of a pawl which catches into ratchet teeth on one of the flanges of the drum, and there is a similar contrivance on the other flange to prevent the drum from turning with the spindle, which can only be done by disconnecting the pawl from its place.

Self-Acting Brake.

A brake of the above mentioned kind has been intented by John T. Denniston, of Lyons, N. Y., who has taken measures to secure a patent. This brake is self-acting and the engineer by reversing the engine, and thereby retarding the velocity of the train, causes the brakes of each car to act upon the wheels independently of the attention of the brakesman. It consists in having two sets of springs to each buffer rod, and so arranged that one set acts upon the buffer rods when they are drawn out from the cars (as when the train is going at a high speed), whilst the other set acts upon the buffer rods when they are forced inwards (as when the speed is relaxed). The buffer rods are connected to brake levers which cause the shoes to bear upon the wheels when the buffer rods are forced inwards. As it is occasionally necessary to back the train, a simple device enables the engineer to operate all the brakes, so that the above arrangement offers no impediment to the backing.

Safety Brake.

John Askwith, of Birmingham, Conn., has taken measures to secure a patent for the above. Instead of the ordinary brake blocks, the inventor employs swinging or movable shoes, which extend from the frame of the truck to the rail, and have flanges which reach below the top of the rail, and being on the inside of it act in a manner similar to the flanges on wheels. These shoes therefore press upon both the wheels, and also upon the rails, thus lessening the wear and tear by exposing a greater surface to be acted upon; the main object attained is safety, for besides the beneficial tendency of the flanges should an axle break, the shoes will fall on the track and sustain the car. Two sets of knuckle-jointed levers are used to work the shoes, that set immediately connected to them being horizontal, while the others are vertical, and besides jointing on to the former, are also connected to a cross piece. A chain and windlass give the required tension, and one part of the drum on which the chain winds is conical in order that it may be operated with rapidity whilst slack. That the brake may be applied as tightly or as loosely as desired, there is employed a ratchet wheel having teeth on both the cylindrical and flat surfaces, so that by using a double-toothed pawl the chain may be tightened the half length of a tooth.

IMPROVED MACHINE FOR CUTTING TIN---Fig. 1.

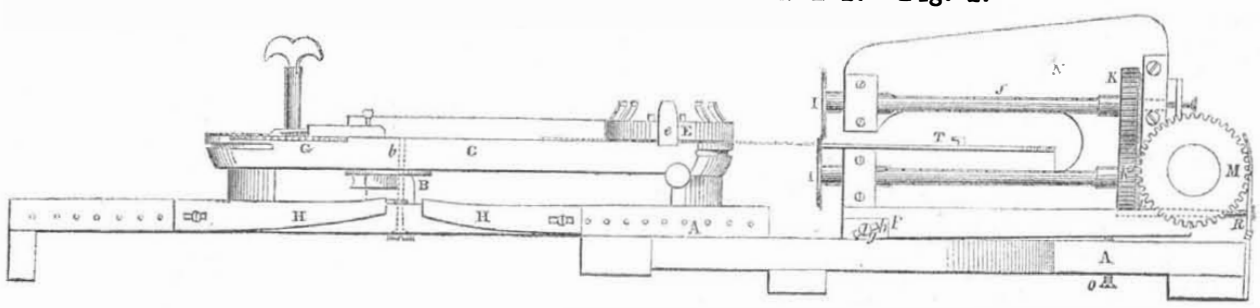


Figure 2.

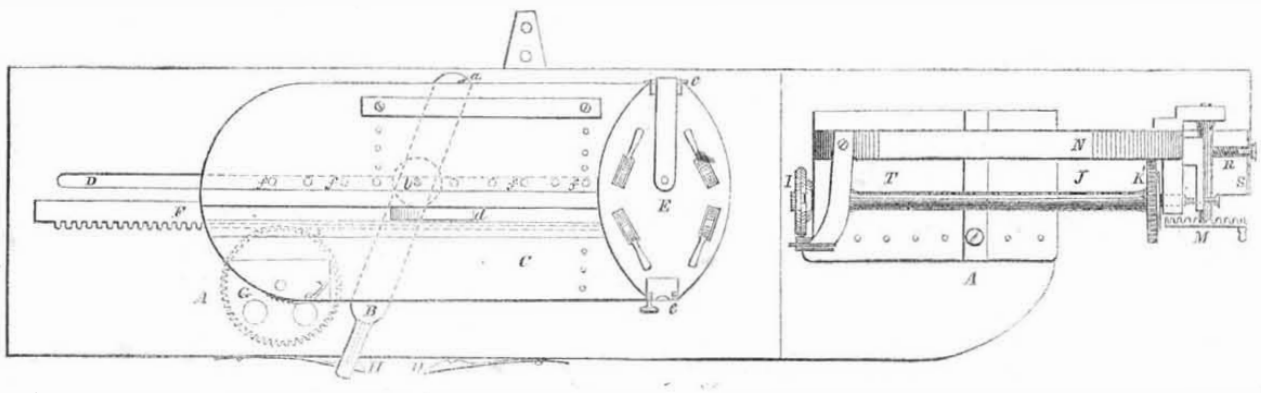


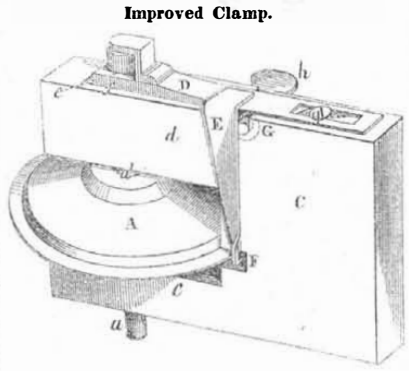
Figure 1 is a side elevation, and figure 2 is a plan view, of an improved machine for cutting tin in forms of sections of a circle for various articles of tin ware. The same letters refer to like parts. The inventor is H. C. Hart, of New York city.

A A represents the bench, and C is a movable feed table on the bench to feed in the tin plate into the cutters, in the manner desired; B is a lever with its fulcrum at *a*, to feed forward and run back the table C. The bolt, *b*, is an axis passing through lever, B, and table, C, working in a longitudinal slot, D, in the bench or bed plate, A, under C; E is a clamp at the front end of the table for securing the tin plate to feed it to the cutting rollers; F is a rack bar operated by a pinion, G, for moving forward the plate of tin in the clamp; H H are spring catches secured at one side of the bench, A, for retaining one end of lever, B; I I are the circular roll cutters or shears. They are secured on spindles, J, and receive a rotary motion by the bevel gearing, M K K'. The cutting shears are secured in an appropriate frame, N.

The clamp, E, is raised; it being attached to hinge, *c*, at one end, and the plate of tin is then placed under it on the table, C. The back edge of the plate rests against the stop, *d*, and rack bar, F, the clamp is then pressed upon the tin plate and secured by the catch, *e*. The front of the plate of tin is thrust sufficiently far forward as to allow it to go in between cutting rolls, I I, as shown in dotted lines in figure 1. As the table swings on the bolt axis, *b*, by moving from one side to the other it describes the arc of a circle, consequently the tin plate is cut with its edges forming part of a circle. Every piece of tin so cut complete in itself, will form the section of a concavo-convex body. The lever, B, moves the table, C, forward, and the rack bar, F, moves the tin plate forward in the clamp to be cut into such segments of a circle as may be required. A series of holes, *f*, is made in table, C, for the purpose of shifting the axis bolt, *b*, to alter the sweep of the table, C, on its axis to cut large and small segments of a circle from the tin plate.

O is a screw bolt on which the back end of frame, N, rests, and by which it can be elevated or lowered and the cutting rolls, I I, made to cut to the incline necessary to operate well; R is another screw bolt to draw back frame, N, in plate, S. In the plates, P (one on each side) are inclined slots, *h*, in which screws, *g*, work to allow the frame to be slightly elevated or depressed and drawn back, so that the cutters can be placed in line with respect to the feed table, C; T is a bed behind the roll cutters on which the outer edge of the plate of tin rests while the plate is being cut. The key on the arbor of the rack wheel, G, is to move the wheel to operate the rack bar, F, and advance the plate of tin.—The two catches, H H, are to hold the lever, B, for the first and second cuts of the rolls on the tin plate. There are small eccentric heads working through the plate of clamp, E, to press upon and release the plate of tin which is held between the plate of clamp, E, and on the face of feed table C. It will be observed that by means of the lever, B, arranged and operating as described, the feed table, C, is so adjusted as to allow the plate of tin to be cut in segments of circles of various sizes, and by properly adjusting the set screws, R O *g*, the cutters can always be properly inclined, and placed in correct cutting line, with respect to the position of the plate of tin.

Improved Clamp.



This figure is a perspective view of an improved clamp for tinsmiths, by the same inventor. Its nature consists in securing the sheet of tin, or it may be iron, between two discs, which have a rotary motion communicated to them by the cutters or cutter, as they act upon the sheet of metal. The upper disc has springs connected to it, by which the operator, by an eccentric pin, makes it press upon the sheet of metal, and also releases it to hold the plate to the cutter, and take out the cut and feed in a new plate.

A is the top disc; the under one is just like it. They are placed on separate spindles, *a a'* with their interior smooth faces together. C is the stock of the clamp; the spindle, *a*, is retained in the bearing stock, *c*, and *a'* in that of *d*. The central space between the two discs is for the reception of the sheet of tin to be cut, into the bottom or lid, of boxes, pans, &c.; *f*, is a clasp around a groove, *e*, in the shoulder of spindle *a'*; near the top, *e*, is a strap, and there is a spring, F, inserted in the stirrup foot of this strap with its tension downwards, which makes the strap, E, with its top plate, D, and clasp, *f*, act on the spindle *a'*, to press down the top disc, A, firmly against the face of the under disc, so as to keep them close together and hold the sheet of tin firmly between them; *h* is a pin which works in a space, G, under the top plate, D, of the spring strap, E. This pin has an eccentric knob on it inside, by turning it therefore, the plate, D, is raised, and the clasp, *f*, raises the spindle, *a'*, and thus raises the disc, A, in other words, opens, the mouth of the clamp to take out and put in a plate. The disc having separate spindles, they turn easily in their bearings; the sheet of metal to be cut is placed on the lower disc; the eccentric pin, *u*, is turned, and the spring, F, acts to clamp the sheet at once between the discs; *g* is a slot and screw to move the plate, D, backwards or forwards. This is certainly a very beautiful and excellent clamp for holding plates of metal to be cut into circles, for the bottoms of tin vessels. The clamp is so made that discs of different sizes can be placed in and taken out to cut large and small discs.

Measures have been taken to secure a patent for these useful improvements, and more information respecting them can be obtained by letter addressed to Cowing & Co., Seneca Falls, N. Y.

A casting took place March 19th at the foundry at Woolwich dockyard, Eng., of a brass screw propeller for the Agamamnon, 91, screw steamship, at Portsmouth. The quantity of metal required for the casting was about 11 tons, and the time occupied in running it first, into an iron pot made for the purpose, and subsequently into the screw propeller mould, was about 20 minutes.

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Scientific American

NEW-YORK, APRIL 30, 1853

Water and Steam----Waste of Power.

Steam power, for manufacturing purposes, is fast supplanting that of water in many places. Some years ago it would have been thought insane, in a business point of view, to propose a steam engine for driving the machinery of almost any factory. Neither a cotton nor woolen manufactory, it was believed, could be carried on but by the side of some river or creek, where there was an abundance of water and a good fall, to drive a water wheel. This is the reason why we find all the large old factories in our country established on sites commanding great water power. Some of these, too, are situated in exceedingly inconvenient localities, so far as it relates to carrying the raw materials to, and the manufactured products from them. The greatest manufacturing district in the State of New York, is perhaps the Valley of Saquoit, Oneida Co.; the creek bearing this name is studded with factories, and its waters are the hardest wrought of any in our land. This valley is two hundred and twenty-five miles from the sea-board and market—the raw materials have all to be carried up that distance and back again to New York City, involving an immense amount of carriage outlay. The factories in Massachusetts, and some other States, (at least many of them), are also situated far in the interior; thus there are quite a number situated in the mountainous district of Berkshire, near Pittsfield, and there are some away over the Green Mountains, in Vermont. Water privileges, at one time, were great objects of speculation, and water power is no doubt the most economical, in itself, but steam power has greatly reduced the estimation in which water privileges were once held, for in many respects it is superior, hence its domain is spreading far and wide, especially near the great marts of American commerce. One of the largest flouring companies of Rochester, N. Y.—a place distinguished for its water power and mills for grinding—is about to commence manufacturing flour by steam within a mile of New York City. The business is to be conducted on an extensive scale, and if it were not more economical to use steam than water power this project would certainly never have been undertaken; the projectors have no doubt counted the cost. To them, undoubtedly, the success of other steam flouring mills in this city has afforded a practical demonstration of the economy of steam power in comparison with water, even when the raw materials are furnished from the very districts in which the Rochester Mills are established.

In making these remarks we do not wish to be understood as advocating a removal of manufacturing establishments from rural districts to great business marts, and the entire substitution of steam for water power in driving machinery; many reasons might be given by us to show the superiority of rural manufacturing villages ever pent up manufacturing cities; our object is to direct attention to what is called "economical prime movers." Water power is undoubtedly much cheaper than steam power; a wheel is cheaper than a steam engine: it consumes no coal and does not require the constant attendance of an engineer or fireman, and yet we find some manufacturing companies substituting steam for their water power. Economy of fuel has recently exercised a wonderful amount of philanthropic inquiry and excitement, in order to find a cheap substitute for the steam engine, and yet we find shrewd business men adopting the steam engine with all its expense of fuel, in place of a prime mover which consumes no fuel at all. There must be some reason for this; and the natural conclusion is, that the economy of the steam engine has been fully established by its success in many manufactories which compete with those who use water power. But who has been counting the cost of employing one kind of a steam engine for another to save fuel; we have not heard a word about the saving of fuel that may be obtained in steam engines themselves. In the city of New York hundreds of tons of coal are puffed into the air every day, and this with such an apparent easy carelessness, as it to say, "the saving of fuel is not the only thing we care about." The great majority of steam engines in our cities are high pressure and non-condensing. The same power could be obtained with one half the expense of fuel, if larger engines, supplied with steam generated under a high pressure, using it expansively and then condensing it, were employed instead of the small high pressure engines. We know that we are rather under-stating than over-stating the economy of fuel that would be obtained by such a change; still we could not expect to see such a change generally adopted, for other questions of economy are embraced under this leading one. Thus, a larger amount of space would be required for machinery, and a greater expense for the engine, and then a great expense would be entailed for condensing water. The economy of fuel, therefore, is not the only expense to which manufacturers look, or to which their attention should be exclusively directed; "all things must be taken into consideration," and the profit and loss of each carefully estimated. In places near large commercial cities, every manufacturing company that has a quarter of an acre of land attached to their factory, should never use a high pressure non-condensing engine. A pond can easily be constructed beside the factory to contain the water for supplying the boilers and the hot well—this water can be obtained from the roof of the factory, and it can be used over and over again for fifty years. At the present time we know there are hundreds of establishments in our land, which, in the aggregate, recklessly throw thousands of tons of coal away into the atmosphere, every day, in the form of compressed steam. This may be the case in some establishments, where the proprietors are continually grumbling about the expense of fuel. We beseech those men to look well into their own interests, and not over them, before they speak evil again, respecting the expense of steam power. We are perfectly satisfied that there is a general and daring waste of steam power, which can be saved to our country, and we hope that what we have said will be the means of directing the attention of all those engaged in manufacturing operations, to this important question, viz., the saving of fuel in the steam engine, according to the knowledge which all engineers possess respecting it.

Drying Goods in Warm Rooms.

Although water possesses a specific gravity eight hundred and fifteen times greater than that of air, yet it can rise into the air as into a vacuum, and mingle amongst it by the same law that gases diffuse through each other. It is this property of water which enables us to have clean and dry linen, for if it were otherwise, if water was the same as oil, our wet clothes would have to be converted into fuel and burned in the fire before we could expel the moisture from them. Were it not for this property of water, the calico printers and woolen dyers could never dry their pieces in shade, sunshine, or stove room. When wet goods of any kind are submitted to heat in a room, they soon become dry, because the air receives the moisture and retains it in its soft embrace, thus enabling us to obtain dry goods and dry clothing by the property of evaporation which belongs to water, and the law of gaseous absorption which reigns among the gases. A curious property of the evaporation of water, discovered by Dr. Dalton is, that the quantity which will rise in a confined space is the same, whether that space be a vacuum or be already filled with air, hence it is only necessary to know what quantity of vapor rises into a vacuum at any particular temperature, to know what quantity will rise into the air. Thus the vapor of water which rises into a vacuum at the temperature of 80°, depresses the mercurial column one inch; its tension is one-thirtieth of the usual tension of air. If water at 80° be admitted into dry air it will increase the tension of that air one-thirtieth if the air is confined; or increase its bulk one thirtieth if the air is allowed to expand. A certain fixed quantity of the vapor of water, therefore, can only rise into a certain fixed quantity of air, hence the air of rooms employed for drying goods may become so saturated with moisture, that the fuel may be expended foolishly in trying to expel the moisture from the goods when it is impossible for the air to take it up, and hence the evaporation of water is greatly facilitated by a current of air. This is the philosophic principle of evaporation embraced by Bessemer, and that mentioned under the head of Recent Foreign Inventions, in this number of the Scientific American, for evaporating sugar syrups.

In evaporating by means of hot air, as in drying goods in the stove rooms of calico print and bleaching works, when the rooms are heated by flues running along the floors, it should not be forgotten by those who have charge of such drying establishments, that a certain time must elapse after the goods are placed in the rooms, before the air is saturated with humidity; due discretion must therefore be exercised not to let any of the hot air escape until it is saturated with moisture.

It has been proposed to us more than once, to employ hot air in raising steam, under the mistaken idea that more steam could be generated with less fuel by the passing of such a rarified hot body through the water. But in evaporating water by heated air—the way wet goods are dried—the vapor itself carries off exactly the same quantity of heat as if it were produced by boiling the water at 212°, while the air associated with it requires also to have its temperature raised, thus requiring more fuel, hence water can never be evaporated in a drying room, with so small an expenditure of fuel, as steam can be generated in a close boiler. These facts are well worthy of attention, inasmuch as they relate to different branches of business, in which very many of our people are interested.

Events of the Week.

To Prevent Railway Collisions.—Our attention has been directed to some editorial remarks in the "Norfolk Daily News," (Va.) relating to an invention of Dr. T. G. Clayton, of that place, for the prevention of railway collisions. The invention is thus described: "When two opposing trains are on a track, one is to operate signals at suitable distance apart, to warn the other of approaching danger. A bent lever at right angles to the rail, is placed at suitable distances, say every two miles. This lever, acted on by the weight of the cars, raises two signals at the distance of one and two miles ahead, which are so contrived that the train on passsing the last signal, depresses the two, before it strikes the second lever. The levers only act in one direction; cars coming from the opposite direction pass over it without effect on the signals."

It is stated by the "News" that it is to be tried on the Seaboard and Roanoke Railroad, and that the expense will not be more than $35 per mile. We hail every invention which has for its object the benefit of our fellow men. Every addition to the safety of railroad travelling enhances the value of railroad stock, for it secures an additional pleasure in the minds of travellers by the increased confidence of their safety. We have, however, always advocated double tracks as the sure and certain remedy for railroad collisions, for we believe it is the only one in which we can place perfect reliance. We have seen a model of an invention for preventing railroad collisions by one train being made to operate the engineer's bell of the other, at a mile or two miles distant.

Electrical Phenomenon—Two weeks ago page 248, we copied a few remarks from the "Philadelphia Ledger," respecting some experiments which had been made in that city by Dr. Swaim, wherein a mode of lighting gas with the finger was described, viz., by obtaining a charge of electricity from belts for driving machinery. Dr. Swaim was in this city last week, and we had the pleasure of igniting gas with the tip of our finger, by simply walking across a carpeted floor, with a shuffling gait and pointing the finger at the gas pipe. The room in which the experiment was made, was warm, the air dry, and the floor covered with a thick Brussels carpet. The same results cannot be obtained unless the air is dry and the carpet isolated. Large sparks were obtained by pointing to a brass knob, by simply walking across the floor. Many of our readers will remember that on page 394, Vol. 5, Scientific American, we published the remarks of Prof. Loomis, of this city, which were made at the meeting of the American Association for the Advancement of Science, held at New Haven in 1850. He stated that to his knowledge there were certain electric houses in New York city, in which a stranger upon entering and attempting to shake hands, received an electric shock. He had tried and witnessed the same phenomenon as Dr. Swaim by walking across a carpeted floor, except igniting the gas. On the page referred to we mentioned the case of a carpet being set on fire by electricity generated in the same manner. We have much to learn yet respecting electrical phenomena.

Settlement of a great Patent Case.—The case of Sloat vs. Patton, in Philadelphia, in which an injunction was granted has been settled. The complainant having purchased out Mr. Patton's interest for $25,000.

A jury trial had been ordered by Mr. Justice Grier, which was set down at the present term, to test the question of infringement on the Woodworth patent.

New Steam Yacht.—Cornelius Vanderbilt, Esq., the wealthy steamship proprietor, is having a beautiful steam yacht constructed, named the "North Star." The engines are now being put in at the Allaire Works; they are double overhead beams with cylinders of 60 inch diameter and 10 feet stroke. It is reported that Mr. V. will take a personal trip in her to Europe, along with some friends, during the coming summer. We hope he will, so as to test the beam in comparison with the side lever engines on the Atlantic.

The Patent Office done for.

The new Secretary of the Interior, Mr. McClelland, has removed with his clerks into the East wing of the Patent Office. A resolution on the motion of Mr. Cartter, of Ohio, passed the House of Representatives against the occupation of the Patent Office by any other corps than those belonging to the Patent Office; this resolution was struck out by the Senate, and now the Patent Office is done for. It will be long before it can be occupied for the purposes originally designed in its construction. Hundreds of models must still rust and rot in the vaults, and the rights and interests of the inventors of the Republic be trampled under foot. The late Secretary of the Interior is to blame, as he is "the one by whom the offence came." We had hoped that the whole Patent Office building would have been kept intact for the use of inventors' business, and an agricultural department for the benefit of our planters and farmers, the two interests, mechanical and agricultural, dwelling in harmony as they have heretofore.

The New Commissioner of Patents.

Judge Mason, the new Commissioner of Patents, has not yet arrived in Washington. In the meantime the Chief Clerk is Acting-Commissioner. It is said that there is an immense army of office-seekers awaiting his Honor's arrival at the seat of government. Is is intended by many to get the new Commissioner to make some new rules for the hearing of rejected applications, viz., that he will personally consider written arguments in reply to the rejections of the Examiners. In the meantime the Examiners appear to be working hard, as the long list of claims this week in our columns testify.

Natural Curiosity.

We have received from A. Hotchkins, of Schenevus, Otsego County, N. Y., several small branches of a tree which grew in his yard. The tree from which they were taken is a fir, and while one branch is the same as the tree—an evergreen; the other is totally different in appearance, and is annual in its foliage, as it loses its leaves in winter and again buds in the spring. The tree was removed from a swamp about two years ago; the wild branch forms part of the tree and grows in a small clump. It is no doubt the natural growth of a seed which entered a crevice of the bark of the tree, and there found soil enough to root and grow up.

More strikes for wages have taken place since our last. The movement we perceive is spreading west; in general an advance of wages has been obtained.

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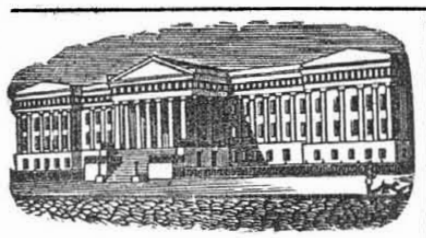

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 19, 1853

WILLOWERS—Hy F. A Calvert, of Lowell, Mass.: I claim the combination of a set of feeding rollers and endless feeding apron, having an intermittent motion imparted to them, for the purpose set forth, with the cleaning cylinder of a willower.

EXCLUDING DUST FROM RAILROAD CARS—By J. M. Cook, of Taunton, Mass: I lay no claim to the application of vertical blinds, shutters, or screens, on the outside of railroad cars, and made to stand at angles of about forty-five degrees therewith, for the purpose of preventing the entrance of dust, smoke, or cinders into the windows thereof.

But I claim the manner of constructing and applying a deflector to the outside of a railroad car, the same consisting not only in making it to extend along the bottom horizontal or lower part, but up along the vertical side of a window opening, the air impinged against by the vertical face of the guard, will be driven or moved downwards, and made to pass under or ovar the guard, so as to prevent the dust thrown directly upwards from the track, as well as that moving horizontally, or otherwise, from entering the windows, as described.

PLANKING HAT BODIES—By Phineas Emmons, of New York City: I claim the combination of a reciprocating rotary rubber or presser, with an endless elastic apron, so that by vibrating said rubber, a reciprocating intermittent diffcrential movement is given to the apron, thereby operating on both sides of the body and working it forward at the same time, substantially in the mode of construction and manner of operation, as set forth.

ROLLING BAR-IRON—By J. A. Hartupee & Abram Alexander, of Pittsburgh, Pa.: We claim the combination and arrangement of the two parallel horizontal rollers, with the two vertical rollers, in such a manner that by raising or lowering the upper roller, to form a thicker or a thinner bar, one of the vertical rollers will be raised or lowered with it, and at the same time, the peripheries of all the rollers, be kept in contact and in their proper relative positions with each other, and also in such a manner that by moving the lower horizontal roller endwise in its bearings, to make a narrower or a broader bar, the aforesaid vertical roller will be moved laterally with the said lower horizontal roller, while at the same time the peripheries of all the rollers will be kept in contact, and in proper relative positions with each other, as set forth.

COOKING RANGES—By Alex. McPherson, of New York City: I claim the arrangement of the vertical end flues, and diagonal cross plate under the oven, for causing the gas to traverse under the entire surface of the oven of the cooking range, operating as set forth.

HARVESTERS—By John H. Manny, of Waddam's Grove, Ill. Patented in England Dec 9, 1852: I claim constructing the lower part of the finger or the upper, or both, with a recess on either side in front of the finger bar, and an angular ridge between the two recesses, to cut entangled fibres, whereby the clogging of the cutting apparatus is effectually prevented, as described.

Also constructing the fingers so that the sides of its upper half will overhang those of its lower half, the cutter playing between the two, substantially as set forth.

COTTON SEED PLANTERS—By Samuel Miller, of Washington College, Tenn: I claim the combination of the open or latticed bottom of the seed hopper, with the teeth on the axle passing through them into said hopper, for the purpose of drawing or forcing out the seed, so that they may be drilled into the ground, the whole being arranged in the manner set forth.

SCREW BLANKS—By T. Newbury, Taunton, Mass.: I claim the detached tool posts, arranged as described, in combination with the comb arm and arm for carrying the threading tool under an arrangement and construction, as set forth.

GIG MILLS FOR DRESSING CLOTH—By Amasa Woolson, of Springfield, Vt.: I claim in a gig mill, or other machine for dressing cloth, hanging the cloth rollers in a revolving carriage, or its equivalent, by means of which the cloth is run in a reversed direction through the machine without the necessity of unwinding it from and re-winding it upon the cloth rollers, as before practiced.

SEWING MACHINES—By William Wickersham, of Lowell, Mass.: I lay no claim to the combination of a single hooked needle and two thread guides or carriers, as made to operate together in a knitting machine, and for the purpose of laying two threads over a needle, during the process of the formation of a knit fabric; but I claim the combination of a single needle and two thread guides, carrying separate threads, so operating, that during one passage of the needle through and out of the cloth, or other material to be sewed, one of the said guides shall lay its threads into the hook of the needle, while during the next passage of the needle through and out of the cloth, the other guide shall lay its thread in the hook of the needle, each guide acting, alternately as specified.

And for the purpose of enabling a machine of the above description, or one in which two thread guides and a single needle are employed to sew with two threads, to be used for producing the chain stitch, with one single thread, passing through one of the eyes of its two thread guides, as described, I claim the improvement of making one of the said guides, viz, the guide with the long slot for receiving the thread, in its passage to and through the other guide, as specified.

Also the above described peculiar mode of sewing cloth, or other fabric, viz., by combining two threads with the fabric, by drawing them through from the same side of the cloth and through each other's loops, interlooping them in plegma stitches, so that the threads alternately bind each other, substantially as specified.

I do not claim a hooked needle, having a contrivance, such as either a lever turning on a fulcrum applied to, or a needle or wire, made to extend and work through the shank of the hook, as is used in knitting machinery; but I claim the improved arrangement of applying the closing slide of the hooked needle, to the same side as the barb or hook, so that it may slide in a groove in the needle or carrier, parallel to the motion of the needle, in the manner specified.

PURIFYING ROSIN OIL—By S. L. Dana, of Lowell, Mass. (assignors to the proprietors of locks and canals of Massachusetts: I do not confine my claim to the use of lime as a base in the above process, although I prefer it, alumina, magnesia, potash, or soda, or oxyde of lead, may be used in the proportion which their atomic weights bear to that of lime.

I claim the above described process, or its equivalent, of preparing a rosin oil, free from the peculiar and offensive odor which characterizes the rosin oil of commerce, by combining, as above described, the fluid formed by the first distillation of rosin or rosin oil, however produced, with slacked lime or other alkaline, earthy, or metallic base, equivalent thereto, as described, and distilling from the compound thus formed a deodorized preparation of rosin oil, as described.

RE-ISSUES.

TRIMMING BOOKS, &C—By L. F. Markham, of Cambridgeport, Mass. Patented April 18, 1848: I claim a turning and adjustable book holder, arranged as described, so as to be made to assume either of the three positions specified, and so that the three edges of a book may be trimmed, by a single adjustment of the same in said holder, and by the movement of said holder on its pivot, consecutively to each of the aforesaid three positions, whether such holder be combined with a reciprocating knife or cutter, having any other shape or motion.

Also the adjustable frame in combination with the trimming book holder, or the turning and adjustable book holder, for the purpose specified.

Also, the combination of the table, on which the book holder is supported, arranged so as to be gradually raised, to convey the edges of the book to the knife, with a reciprocating knife or any other knife or cutter having any other shape or motion.

FIRE ARMS—By Benj. Chambers, of Washington, D. C Patented July 31, 1849: I claim a hinged breech piece, which is easily moved into and out of place, in closing and opening the gun, for the purpose of loading, swabbing, &c, substantially as described.

Also, in combination with a gun having a dissected screw breech, the flanged shield through which the cartridge is made to pass into the chamber over the dissected screw, without danger of being broken by the ends and edges of the threads, as set forth.

Also, in combination with a rammer for charging guns at the breech, the projecting central point, whereby the cartridge, in being driven to its place in the chamber, is perforated at its base, to receive the point of the percussion cap, for the purpose of insuring the ignition of the gunpowder, as set forth.

Also the enlargement near the shoulders, of the rammer, whereby the shield through which the cartridge has been rammed, is made to adhere, by friction, to the rammer, and to be drawn out of the breech of the gun, without requiring a separate operation for taking it out; in these claims I shall not confine myself to the exact arrangements of parts described, but shall vary the same at pleasure, while I attain the same ends by means substantially the same.

CANNON LOCK—By Benj. Chambers (assignor to Joanna Chambers,) of Washington, D. C. Patented July 31, 1349: I claim the method of securing the lock to the gun, by means of the sectional or quarter screws, for the purpose of speedily opening or removing the lock, to supply it with the cap, pellet, or other material, by which the gunpowder is ignited, and for firmly holding the same in place on the gun when it is to be discharged, as described.

Also, forming the gun lock in such a manner that the hammer rod and the percussion rod shall be in separate pieces, laying axially within the same barrel, whereby the coiled main spring is made to urge the hammer rod against the head of the percussion rod to discharge the piece, and the recoil spring on the percussion rod, is made immediately to draw back and hold the valve which closes the interior of the lock, against access of smoke and gases, as set forth.

DESIGNS.

BUST OF DANIEL WEBSTER—By Thos. Ball, of Boston, Mass.

WATER COOLER—By E. M. Manigle & George Phipps, of Philadelphia, Pa.

CLOCK CASE FRONTS—By Charles Chinnock, of New York City (three designs).

COOKING STOVE—By Jacob Beesley (assignor to Wm. P. Cresson), of Spring Garden, Pa

COOKING STOVE—By S. H. Sailor (assignor to C. W. Warnick & Frederick Leibrandt), of Philadelphia, Pa.

The Hoosic Tunnel.

In relation to the action of the Joint Special Committee of the Legislature of Massachusetts, in favor of granting the aid of the State to the "Hoosic Tunnel" Railroad Company, the Report arrives at the following conclusions, viz.:—That the tunnel route will make a reduction of twenty-two to seventy miles in distance between Troy and the city of Boston, and all the northern towns of Massachusetts—that it will reduce the summit elevation 640 feet, perpendicularly diminish the grade from 83 to 39 feet to the mile, obliterate seven entire miles of curves, replace a ferry that costs $25,000 yearly, by a bridge, and enable a freight engine to take twenty-five long freight cars in place of ten to fourteen—the usual number on the three divisions of the Western—thus reducing the cost of transportation about one half, and enabling Boston to participate in the western business, amounting to three and a half millions of tons on the Hudson, and increasing at the rate of more than half a million yearly. The committee are satisfied from the evidence that the tunnel will ventilate itself, as the steam and smoke are proved to condense against the roof and give no trouble. As respects the cost, they consider it proved that the tunnel will range from one to two millions, and attach little weight as to the cost of some English tunnels, as they were made of gigantic and unnecessary size, when railroad tunneling was not understood, and being through wet clay, required very expensive masonry.

The committee are satisfied the tunnel may be made in four years, either with or without the machine, which worked to their satisfaction. Considering the tunnel essential to the prosperity of the State, and not seriously injurious to the Western Railroad, which derives nine-tenths of its net income from the local business, and little profit from the through trade, which has been for some years diminishing, they recommend the passage of the bill.

Caloric--Perpetual Motion.

MESSRS. EDITORS.—In the Scientific American of January 29, on page 54, I find in an article upon the caloric engine, the following sentences:—

"Thus this engine is constructed upon the principle of heat force; that is, if a certain amount of heat can be retained, it will produce repeated effects upon innumerable quantities of water—a thing utterly at variance with mechanical philosophy."

"This was certainly a kind of perpetual motion engine, the same heat and the same air being used over and over again."

Now I think that here is a theoretic error. Heat can theoretically be used over and over again, and it only remains to reduce this principle to practice to realize the fact that heat is unlike gravitation. To illustrate my meaning, let us take the case of a common steam engine. No heat is lost by the condensation. And if the apparatus were not too cumbersome—that is, if we could prevent all loss by radiation—we should be able to use the 20 pints of water heated from 50° to 110° in condensing an amount of steam equal to one pint of water, by heating air to produce a force 4 times as great as that produced by the steam. The only way to avoid the conclusion that heat can be used more than once, seems to me to be to deny that the water at 110°, from the hot-well of a common steam engine would tend to expand air at 50°, which is utterly at variance with facts.—There is a fundamental differenee between the force of caloric and that of gravitation, that the latter leaves a power exhausted, while in the case of the former an additional force can be obtained by the natural radiation of the heat, after the caloric has once been used to obtain power by expansion, very nearly the same power being capable of being obtained for the contraction. P. M H.

[If there is a theoretic error in the principle we annunciated, our correspondent has tailed to point it out. When he talks about an *additional* force being obtained from the radiation of heat he must mean that it is a force different from heat itself, or that it is a portion of the amount of heat generated. We can form no idea of *the effects of heat* apart from bodies possessing gravity. We measure the quantity of heat generated by the temperature of bodies possessing gravity. Our correspondent (and many others) have confused ideas about *using heat over and over again.*

For example let us take a cubic foot of air and heat it to 491°, and it will exert a pressure, of 15 lbs. on the square inch. Cut off the fire influence and the cubic foot of air will expand to two cubic feet, at the atmospheric temperature and exert a pressure of 0. (Air heated to 491° doubles its volume). Now can this expanded 491° of heat be used over again to heat another cubic foot of air to 491°? No. How then can it produce repeated effects upon innumerable quantities of matter? You can compress the two cubic feet of air expanded to atmospheric temperature into one foot, and it will then be brought back to 491°, and exert the pressure of 15 lbs. on the square inch, but then you must just exert as much force to compress it as the force to be obtained after it is compressed. The idea which has been propagated, that heat can act above and beyond the laws of gravity upon bodies possessing gravity is preposterous. We thought we had said enough to show how ridiculous the assumption is, that a certain amount of heat can produce repeated effects upon innumerable quantities of matter, but we see that we must strike a harder blow still.

It is stated that "the hot air engine uses the same heat over and over aagin, except 30°, which is allowed to escape every stroke. This is done, it is stated, by interposing packages of wire gauze between the feed and working cylinders, which takes up the heat from the escaping hot air, and gives it out to the inlet cold air, thus the same quantity of heat produces repeated mechanical effects except the loss of 30° every stroke."

We have fairly quoted the allegements of the advocates of using heat over and over again, and will show by plain figures that it is all moonshine and a deception. Air doubles its volume by the application of 491°. The advocates of hot air say 480°, and we will grant them the point. Well, the working cylinder of the Ericsson engine has a six foot stroke. Allowing the air to be heated to 480°, it will move the piston 6 feet with a pressure of 15 lbs. on the square inch. If allowed to expand to double its volume, its pressure will be reduced to 0. The whole of this stroke would be 12 feet, and the average pressure 7½ lbs. on the square inch, for the expenditure of the fuel that heated the contents of the 6 feet deep cylinder, that is the 480° of heat generated by a certain quantity of coal, would move the piston 12 feet with an average pressure of 7½ lbs. on the square inch. It could not do any more, for the heat would be reduced to that of the atmosphere. But according to those who advocate the hot air regenerator, the 480° will make the piston move 52 feet, with a pressure of 15 lbs. on the square inch, by allowing it to come dashing against a resisting medium of wire gauze at every stroke, and then making another quantity of cold air dash against the gauze upon the principle, we suppose, of hyperbolic reasoning. This is the way they do it. The first stroke, 6 feet (72 inches) is performed by the air heated to 480°, this air comes rushing out against the wire gauze and gives out all its heat, except 30°. Cold air is then poured through the wire gauze, which gives out all its heat, to expand all the air which goes under the piston, and raises it up a second time, the whole six feet, excepting the amount of heat, (30°,) lost, which must be deducted. Now let us cut off the heat from the fire, at the end of the first stroke, and see what amount of work will be done by these wild hot air theorists. 480° is the amount of heat applied to the air; the loss of each stroke is 30°, 72 in. being the length of the stroke. Well (480°÷30°=16) (72÷16=4½) The loss of distance each stroke for 30° of heat is 4½ inches.—Well, first stroke 72 inches; second stroke 72—4½=67½. Third stroke 67½—4½=63 inches, and so on for fifteen strokes, when the loss of 30° each stroke will have reduced all the heat to 0, and it will be found that instead of the engine (as it only can do by pure scientific deduction) moving 12 feet with 7½ pounds pressure, it will have moved 52 feet, with a pressure of 15 lbs. on the square inch, or nine times the actual power which upon any consideration can be derived from 480° of heat. We can tolerate no more nonsense about using heat over and over again to produce repeated mechanical effects upon innumerable quantities of matter; more especially with those who can see by some hocus pocus, that if no loss is caused by radiation and exhaustion, 480° can be made to propel a steamship from Sandy Hook to the Cove of Cork.

Dr. Swaim, of Philadelphia, says, in relation to the "Curious Properties of the Number Nine," if any row of two or more figures be reversed and subtracted from itself, the figures composing the remainder, will, when added horizontally, be a multiple of nine:—

42	846	3261
24	648	1623
18=9×2.	198=9×2.	1638=9×2

This is merely a curiosity, from which he derives no result of practical utility.

Government Sale of Muskets, &c.

On the 19th inst. a sale of about 5,000 flint muskets and other military equipments, took place at the Marine Barracks at Washington.

The boiler of the dredging machine used in the Brooklyn Navy Yard exploded last week, blowing the latter to pieces, and two men, the ngineer and fireman lost their lives.

Bunker Hill Monument was twice struck by lightning a few days since.

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TO CORRESPONDENTS.

A. A. R of Phila.—Do you mean fire gilding of metals or porcelain, or merely electrotyping?

B B., of Pa.—The mere application of an alarm to a prison could not be patented; if you have invented any particular improvement in the alarm, whereby its application is rendered more beneficial, a patent could be secured for it. We should need a sketch to enable us to come to a proper conclusion.

B. P., of Winchester—We know nothing of the establishments to which you refer; we think the steam hammer engines can be adapted to the purposes named.

A. C., of Canada—We do not know of any one who has such a machine as you want.

H U., of Ct—We have never known of a pump constructed as described in your letter; it is probably new and patentable, its advantages over the common pump we do not perceive.

H. S., of N. H.—We cannot discover any thing in your washing machine of a novel character; it is quite common to employ a fluted "rubber" in combination with a fluted stationary bed, the rubber being held in its proper position by means of spiral springs or their equivalents.

R. A., of N Y.—Your observations in regard to how much an object appears magnified contain nothing new, the same ideas are laid down by the ingenious Dr Jurin, in a work entitled "The Microscope Made Easy," by Henry Baker, London, 1744, a copy of this old work is in our possession.

M. M., of Pa.—We cannot undertake to enumerate the different modifications which have been made in the steam engine; if you will send us a sketch we can give you a more satisfactory opinion.

A. M. G., of P.—There is nothing patentable in the change which you present for the construction of paddle wheels; if you examine page 280, Vol. 5, Sci. Am., you will see something on the subject.

G. K. G., of ——.—A steam engine is the only power, we can recommend to elevate your spring water; a good wind-mill might answer; if your creek has but a small quantity of water it would be useless to construct a wheel for it.

E. J. G., of Ind.—Your boiler we believe could work well, but we have seen one lately, and for which a patent will soon be granted, which meets the same conditions.

A. C. C., of Tenn—There can be no fears about moving the balloon in a direct course, if enough of power can be obtained to propel it. We have seen no plan that presents to us any hopes of success. Some one may soon be discovered. We do not know of any cement in use that will suit your purpose, but we believe that hydraulic cement used in the inside, and the seams pointed with cement made of dry air slacked lime, white lead, and clean sand and first allowed to dry, would answer.

J. A. S., of Pa.—We could not furnish you with the first 22 numbers of Vol. 7, unless you take the last part of the volume also: we have less numbers of the first part of the volume than we have of the last.

T. J. A., of Ohio—It matters not how many saws you use in a gang, your claim will cover twenty as securely as it will two

H. L. W, of Geo.—The weight of the balls is expressed upon the leverage of the arms of the wheel, comparatively, and the same result is produced by the screw with the balls on it according to its pitch, the same law of mechanics rules in every machine—time, space, and weight are the three elements of calculation.

F. P C, of S. C.—The description you give of the alleged improvement in steam engines is very indefinite, but so far as we comprehend its nature we think it contains no advantages not embraced in other devices for the purpose.

J. D. W., of N. Y.—You would observe that a correction was made by us respecting Mr. Hudson's letter at his own request.

H. W. S., of Ind.—We are unable to find any patentable novelty in your press; it is in substance the same as Brown's Eccentric, but more complicated and less effective for that reason.

J. A, of Boston—We transmitted your papers per Adams & Co.

E. W., of Ct.—We are having an engraving of your pistol prepared; it will be published when complete.

W. R, of Me.—We think it unnecessary to repeat our opinions respecting the use of hot air as a motor. Whatever we state in the Scientific American as our opinion, is not intended to contradict our private views—we speak as we think; if you do not it is no fault of ours.

L. S, of Ind.—We do not know of a more competent person to undertake your agency than Mr. S. C. Hills, No. 12 Platt st., he has several agencies and attends to them faithfully.

Money received on account of Patent Office business for the week ending Saturday, April 23:—

W. D. E, of Miss., $30; G. N., of N. Y., $30; J. W. H., of R. I., $5; C. P., of Mich., $30; P. S., of N. Y., $20; F. O. D., of Pa, $10; P. G. G., of N. Y., $150; S. F. A., of N Y, $30: T. & D. A. H., of Pa., $30; W. W. & Co., of Ct., $175; W. W., of Ct., $20; J. B, of Mich., $55; C. M., of Mo., $46; G. A. B., of Ill, $25; H. C. S., of Ct, $30; I C., of N. Y., $30; C. C, of Ky., $25; J. B., of N. Y., $30; S. M, of Pa., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday April 23:—

W. W. W, of Ct.; C. P., of Mich.; J O., of N. Y.; C. M., of Mo., G. A. B., of Ill; R. C. W., of Ohio; A. H. R., of Pa.

A Chapter of Suggestions, &c.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

PATENT CLAIMS—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

ADVERTISEMENTS.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

WANTED—A person to take one-third interest in a Machine Works and Iron Foundry, two and a half hours' ride from New York, established 29 years. Applications in writing may be left at this office addressed to "F. C.," care of Munn & Co. A practical machinist would be preferred. 33 2*

BOILERS FOR SALE CHEAP—Suitable for land or marine purposes. Apply between 3 and 6, or by letter to CHARLES MORRIS, 109 East 18th st., Third avenue. 1*

WANTED—A situation as Manager or Superintendent of a Gas Works, by a person well acquainted with the construction of gas works, gas manufacture, meters, fittings, &c. Good references can be given. Address "W. H. C.," Kensington, Philadelphia, Pa. 1*

JAMES D. JOHNSON, Bridgeport, Ct., Proprietor of Wood's Patent Shingle Machine. Persons wishing to purchase rights or machines, can address as above. This is unquestionably the best machine in use for cutting shingles. 33tf

MELODEONS.—Patent rights for these instruments in several of the United States, are offered for sale upon reasonable terms. Patented in 1851. Have been thoroughly tested and will be warranted equal in all respects, and in some, superior to any yet offered to the public. Letters addressed MARVIN SMITH, New Haven, Conn., will receive prompt attention, references given. 31 3*

MORTISING MACHINE—"Dear Sirs, I received the Portable Mortising Machine about three weeks ago; I have used it, and am very well pleased with it; it is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851."

"Since I have been a subscriber to your paper I have purchased one of your Mortising Machines, for which I would not take double its price and do without it. WM. M. FLEMING.
Elizabethtown, Tenn., Jan. 8 1853."

This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20
MUNN & CO.

WHEELER, WILSON, & Co.—Watertown, Ct., proprietors and manufacturers of Allen B. Wilson's Patent Stitching Machine. Patented June 15, 1852, it can be seen at the Company's Office 265 Broadway, New York. 30 20*

PALMER'S PATENT LEG—Manufactured by Palmer & Co., at 5 Burt's Block, Springfield, Mass., for New England and New York State, and 376 Chestnut street, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London. 1851, in competition with thirty other varieties of artificial legs (by the best artists in London and Paris), it received the Prize Medal as the best.
25 20* (16e3w)

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
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LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati, O. 27 6m*

PORTABLE FORGES—REMOVAL.—The subscriber (successor to E. Flagler), and sole manufacturer of Queen's Patent Portable Forge and Bellows, respectfully gives notice that he will remove his depot for the sale of said Forges to 210 Water street (directly opposite to present location), on the first of May next, where, by the long attested superiority of this Portable Forge over all others for the use of blacksmiths, machinists, jewellers, dentists, braziers, shipping, quarries, public works, &c. &c. he hopes to retain a continuation of the past patronage. FREDERICK P. FLAGLER,
32 4* 211 Water st until May 1st.

FRENCH AND ENGLISH PATCHES—The undersigned are receiving, direct from Paris and Manchester, monthly collections of the styles of calicoes, jaconets, delaines, cottons, woolens, &c., which are collected in advance of their appearance in market. The Manchester Patterns, comprise, in one collection and subscription of $100 per annum, all of the above, except woolens. The terms of the Paris designs are according to the respective classes, and will be furnished on application to
CLARK & LAURIE,
32 2* 124 Front street, N. Y.

BARLOW'S UNSURPASSED Planing Tonguеing and Grooving Machines. Testimonials of the highest character can be given of their superiority over all others in use. For rights or other in formation. Apply to A. K. Wellington, 184 Twelfth street, New York City. 32tf

PITTS' SEPARATORS, HORSE POWERS, Corn and Cob Mills, &c.—The subscriber having recently located at Buffalo, N. Y., and erected a large establishment for the future manufacture of the above machines, desires all orders hereafter addressed J. A. PITTS, Buffalo, N. Y. 32 2*

THE AMERICAN ENGINEER, DRAUGHTSman, and Machinist's Assistant, designed for practical workingmen, apprentices, and those intended for the engineering profession, illustrated with 200 wood cuts, and 14 large engraved lithographic plates of recently constructed American machinery and engine work, by Oliver Byrne, 1 Vol., large 4 to. Embracing Mathematical and Drawing Instruments, Geometrical Problems, Brackets and Pillow Blocks, Lubricators, Electric Steam Gauge, Horse Power, Parallel Motions, Indicator, Safety Valves, High Pressure Steam Engines, Steamship Engines and Boilers, Rotary Engines, Locomotives, Screw Propellers, Ericsson's Caloric Engine, &c, &c, price $5. The work will be sent to any part of the United States, free of postage, upon the receipt of the amount by mail, address C. A. BROWNE, & CO, publishers, N. W. Corner, of 4th and Arch streets, Philadelphia. 31 6*

STAVE MACHINERY—We manufacture the improved Mowry Stave Machine for slack work, cutting, dressing, and jointing, at one operation, without any handling of the stave until it is finished, after you place the bolt of wood upon the feeding carriage. The machine feeds itself, cutting, dressing, and jointing in a finished and uniform manner 80 to 100 staves a minute. Any kind of timber fit for a stave may be used, even such as could not be rived, as elm, hickory, beach, &c. The cost of running the machine need not exceed, if it equals, 50cts per M, for cutting, dressing, jointing, removing, and piling up, where a machine is kept steadily at work. For machinery and rights in the State of New York, apply to CHAS. MOWRY, Auburn, N. Y.; for machinery and rights elsewhere, to the subscribers, GWYNNES & SHEFFIELD, Urbana, Ohio. 30tf

WOODBURY'S PATENT PLANING Machines—I have recently improved the manufacture of my Patent Planing Machines, making them strong and easy to operate, and am now ready to sell my 24 inch Surfacing Machines for $700, and 14 inch Surfacing Machines for $650 each. I will warrant, by a special contract, that ONE of my aforesaid machines will plane as many boards or plank as two of the Woodworth machines in the same time, and do it better and with less power. I also manufacture a superior Tonguing and Grooving Machine for $350, which can be either attached to the Planing Machine, or worked separately. JOSEPH P. WOODBURY, Patentee, Border st, East Boston, Mass. 29tf

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc.
CHARLES W. COPELAND,
29 13* Consulting Engineer, 64 Broadway.

THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N H. M. Co., 12 Platt st, N. Y. 28tf.

BALLOONS.—A splendid tri colored French flag-silk balloon for sale. Also a plain silk one, used several times, but in good order. Each of them large enough, when inflated with coal gas, to ascend with a man. Instruction given gratis.
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PIG IRON—American and Scotch, of favorite brands; also Cupola Fire Bricks. Fire Clay, Sand and Foundry Facings of every approved description, for sale by G.O ROBERTSON, & CO., office 135 Water street, (corner of Pine), N. Y. 31 6eow*

BEARDSLEE'S PATENT PLANING Tonguеing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany.
15tf

T. J. SLOAN'S PATENT HYDROSTAT—For the Prevention of Steam Boiler Explosions. The undersigned having made extensive arrangements for the manufacture of these machines, are now prepared to receive orders for the immediate application of the same to boilers of every description. They have endeavored to place the instrument within the reach of all, by selling it at a very low price, the cost of one horse-power being only $20, five horse-power, $30, and so on, according to the capacity of the boiler. SLOAN & LEGGETT, Proprietors and Manufacturers, foot of East 25th st, New York. 30tf

P. N. FITZGERALD, Counsellor at Law has recently resigned the office of principal Examiner of Patents, which he has held for many years, and is ready to assist, professionally, in the preparation and trial of patent causes before the U. S. Courts in any of the States, and before the Supreme Court of the United States. He also acts as Counsel in cases before the Patent Office, and on appeals therefrom, but does not prepare applications for Patents Office corner of E and 8th sts., Washington, D. C. 18 tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 27tf

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27tf P. A. LEONARD.

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QUARTERMAN & SON, 114 John st.,
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BOSTON BELTING COMPANY—No. 37 Milk street, Boston, Manufacturers of Machine Belting, Steam Packing, Engine and Conducting Hose, and all other articles of Vulcanized India Rubber, used for mechanical and manufacturing purposes.
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NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tonguеing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass.,
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FALES & GRAY (Successors to TRACY & FALES), RAILROAD CAR MANUFACTURERS—Grove Works, Hartford, Connecticut. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly.
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C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.
For machines or territorial rights, apply to C B. HUTCHINSON & CO., Syracuse, N. Y. 9tf

J. D. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S. Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Serew Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE,
27tf Windsor Locks, Conn.

COCHRAN'S CRUSHING MACHINE—Can be seen in daily operation in Thirteenth street, between 9th and 10th avenues. Parties in want of a machine for crushing and pulverizing quickly and cheaply Quartz Rock, Iron, Lead, Copper, and Silver Ores, and other mineral substances equally hard, are invited to witness the operation of these powerful and simple, but yet effective machines. For further particulars apply to E. & J. BUSSING & CO., No. 32 Cliff st., Y. N. 23tf

PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

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SCIENTIFIC MUSEUM.

New Theory of Earthquakes.

The general belief of men respecting the cause of earthquakes, is the igneous theory; in other words, they believe the centre of the earth is a molten mass, and that it is sometimes agitated, causing volcanoes and earthquakes. Those who entertain this belief have ingeniously strung together a great number of facts to prove that volcanic eruptions and earthquakes, *are* in general simultaneous and confined to the same localities. This, however, is not so, for many earthquakes take place when and where there are no volcanic eruptions.

A correspondent of the "London Mining Journal," named Drummond, writing from Comrie, in North Britain, presents a theory entirely different from that of igneous action; he attributes earthquakes to electrical influences, and we believe that Sir Charles Lyell has expressed a belief in the same agency.—Mr. Drummond resides in a district where many shocks of earthquakes are felt every year, and some of them have been so severe as to overthrow houses. The place is a highland village in the bosom of a mountainous country, and the shocks are never felt at many miles from it, hence it must be the centre of the earthquake's influence. He states that no shocks have ever been felt during easterly or westerly winds. All earthquakes that took place there were preceeded within 24 hours by much wind and rain, but they have taken place oftenest in dull, thick, wet weather. The shocks were not felt alike in the same district; the houses which suffered most were built on wet places, no houses built on a depth of dry soil suffered. The earthquakes that have occurred when the weather was dry, were more abrupt, and of greater velocity than those which took place in wet weather. They have often taken place when there were two currents of wind in the atmosphere, one moving contrary to the other. During all the *great* earthquakes, vast quantities of aqueous vapors were in the lower regions of the air, which shows that vapor has much to do with the cause of earthquakes, and Mr. Drummond considers it the medium through which electricity acts to produce the quaking phenomenon.

The earthquakes commenced in that place in 1788, when a magnetic rock was opened up into a quarry for free stones. This has been opened and worked two or three times and it has been observed that according to its exposure by the quarrymen, so was the frequency of earthquakes increased. When shut up they decreased, and ceased for a while altogether, from 1809 to 1817. The rock was then worked again, and the earthquakes commenced their old tricks again. The quarry was again closed, and the earthquakes almost ceased, until it was opened again in 1834, and worked to a far larger extent than ever, exposing a great amount of the magnetic rock surface. The earthquakes, during this time, became fearful and continued to do so, until 1846, when it was shut up, and they have now assumed a milder form. Sounds are often heard in the mountains like central explosions of artillery.

Recent accounts from India inform us that some terrible earthquakes have taken place there; they continued for two weeks, the earth heaving like the billows of the ocean. Earthquakes frequently take place at a great distance from volcanoes, at periods when no volcanic eruption precedes, corresponds with, or follows after. The igneous theory may be true, but it certainly does not account for all earthquakes, and Mr. Drummond says, "I might as well try to submerge the British Isles as to attempt the solution of the earthquake problem upon the hypothesis of its being the effects of molten matter in the interior of the earth."

Force of Winds.

On the island of Martha's Vineyard, in that part of it called Nashauquitsy, there is a natural curiosity illustrative of the force of winds. It is a tree of the Hornbeam kind, which stands in the centre of a small cove in a hill, in such a position that the wind blows upon it from an easterly direction, and can blow from no other. Consequently, at the elevation of near twelve feet the trunk begins to curve to the westward. The westward growth projects from the tree about twenty-five or thirty feet. Not a limb projects to the eastward. The same kind of tree left to grow according to the usual laws, in protected places, is quite comely and of good proportion in its growth.

Flour Packer.

The annexed engraving represents a machine for packing flour in barrels, the invention of Samuel Taggart, who has taken measures to secure a patent.

Fig. 2. Fig 1.

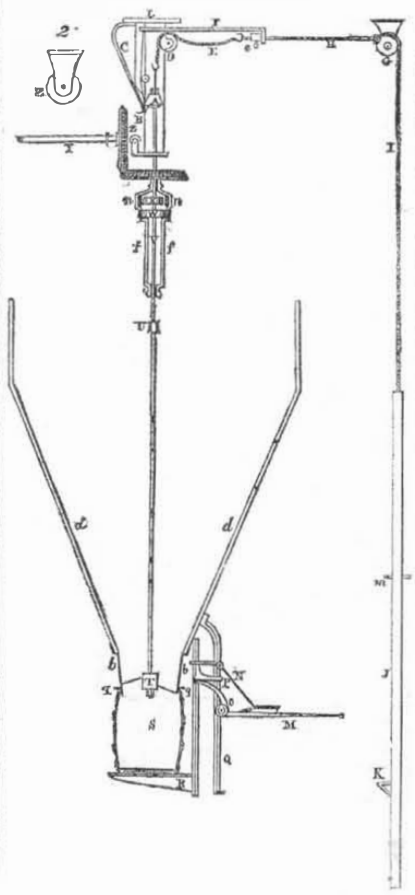

Fig. 1 is a vertical section of the machine, and fig. 2 shows the pulley, Z, drawn to a larger scale.

A is an iron box in which revolves the upper end of the shaft, V, and having the auger, T, attached to the lower end. B is a catch to hold the box, A, to its required height, when the machine is not at work, and is acted on by the spring, C. D and G are pulleys on which run the chain, E, and rope, I, these are connected by the bar, H. *e* is an adjustable stop for regulating the chain, E, which is slack when the machine is not in operation. F is an iron strap, having a recess at one end to receive the upper part of the catch, B, the other end is turned down at a right angle with a hole for the square rod, H, to move through. *q q* is a flange attached to the cast-iron tube, *b b*, and is so constructed as to regulate the requisite height for the barrel, S, to rise, and likewise to prevent the flour from being forced out by the pressure of the atmosphere when the auger is lowered into the barrel. R is an iron plate for the barrel to stand on, and is attached to the slide, P, which latter works in the guide, Q. O is a cam connected with the lever, M, for raising the barrel, the lever being held down, when this has been done by the hand or stop, N. *f f* is a hollow shaft with vertical slots at opposite points and equal distances apart, in which the clutch driver, X, passes up and down. W is a clutch collar made movable in the recess of the shaft, *f f*, and having ribs on its periphery, which serve both as guides and to keep it to its place. U is a coupling to connect the packing shaft, V, and Z, is a pulley over which can be passed a rope to regulate the action of the auger.

The machine is worked in the following manner: the barrel, S, being placed on the stand plate, R, is raised up to the flange, *q q*, by the lever, M, and the flour chest, *d d*, being filled, the operator places his foot on the pad, K, and his hand upon the pin, *m*, and forcing down the rod, J, springs the catch, B, throwing it out from the box, A, when the auger, T, is carried down to the bottom of the barrel. The auger being now in motion advances upward towards the top of the barrel, packing the flour in its progress, the driver, X, being gradually forced upward at the same time, on arriving at the collar, W, it comes in contact with the ribs on the inside of the same, and carries it up to the stops, *n n*. The driver, X, continues to advance until it leaves the ribs on the inside of the collar, W, when the shaft, V, suddenly stops, at the same time the collar drops down to its place, as shown in the engraving.

The operation of packing the barrel with flour is now completed, and the catch, B, having taken effect when the driver, X, was within about half an inch of its required height, holds the auger up within the tube, *b b*, which prevents the flour falling from the chest on the mill floor until the barrel has been replaced by another. This machine is more simple, economical, and durable than any of the kind now in use, and is capable of packing from 50 to 100 barrels per hour.

Applications for machines can be made and further particulars may be known by addressing the inventor, S. Taggart, Indianapolis, Ind.

Niello.

This is a kind of enamelling, practised, according to some writers, as early as the seventh century, but afterwards lost until Finiguerra, an eminent goldsmith of Florence, brought it into great repute in the 15th century. The art is interesting, as it is supposed to have given the first idea of printing from engraved plates. It consists in engraving a subject on gold or silver, and filling the engraved lines with black or very dark-colored enamel. In the general effect of works in niello, there is considerable resemblance to damascening, except that in the latter the engraved lines were filled up with the precious metal, while, in the former, a paste or enamel was made use of. This enamel was a compound of silver, copper, lead, sulphur and borax, forming a dark-colored paste, which was carefully worked into all the lines of the engraving, and fused, by heating the plate. It contrasted favorably with the bright surface of the silver chalice or other article so decorated, producing an effect not unlike that of a copper-plate engraving, or of a daguerreotype. This kind of work, at one period, constituted the favorite means of adorning, not only all kinds of vessels used for sacred purposes, but also sword-hilts, knife-handles, and other articles in which the precious metals formed the basis to work upon. In the Museum, at Florence is the most valuable specimen of ancient niello now existing, being a plate for a pix executed by Finiguerra himself in 1452. An interesting specimen is to be seen in the British Museum, consisting of a silver cup mounted in gold, the ornaments being in niello. This long-neglected art has been revived and again brought into notice by a silversmith of Berlin, named Wagner, who has now settled in Paris. A very successful work in niello was sent by the Messrs. Gass, of Regent street, London, to the Great Exhibition. It was a silver gauntlet niello bracelet, designed by D. Maclise, Esq., R. A., descriptive of "The Promised Gift."

Artists in niello find it necessary to take proofs of their work as they proceed, and so in ancient times it is stated that the work was examined by filling the lines with a black fatty material, and then pressing a mass of a peculiar kind of clay upon the design so as to obtain an impression. This process so nearly resembled printing, that it is only to be wondered at that the latter art was not earlier discovered. It is said that the important secret was at last revealed by a female accidentally placing a bundle of damp linen on a niello plate which had been proved in the workshop of Finiguerra, and which happened to be lying with some of the black material still remaining in the lines. The damp linen absorbed the black, and gave a perfect impression of the plate to the astonishment and delight of Finiguerra, who immediately instituted a series of experiments which ended in the discovery of the art.

Artesian Well.

Ezra Cramer, living near Walkersville, Md. has succeeded in obtaining a plentiful supply of pure, soft water on his limestone farm, by the artesian process of boring; at the depth of 27 feet a solid stratum of limestone was reached, and perforated to the depth of 93 feet further, when the auger suddenly dropped about 9 feet, and an exhaustless supply of pure cold water rose to within a few feet of the surface of the rock.

Wonderful Phenomena.

On the 31st ult., Mr. John Hepler, residing near Monroe, Wisconsin, while plowing in his field, seeing a heavy cloud rising, which indicated a shower, unhitched his team, and in company with his son, each of whom had a span of horses, set out for his house. They had not proceeded far, when a tremendous explosion fell upon them, killing the father instantly, and both spans of horses, together with a loose one which was following the others. The son was stunned by the shock, and lay senseless for some time, but is now nearly recovered. The most singular circumstance in this casuality is, that the horse upon which the son was riding was killed, while the boy, though a higher object, survived this terrible thunderbolt.

Human Bones found in Guano.

From the ship Brandscompt, unloading Peruvian guano, at Leith, Scotland, there were exhumed the remains of three persons, evidently Peruvians, buried in the guano, and which had apparently not been disturbed in the process of loading the ship. The remains illustrate a curious property in the guano in preserving bones, hair, and clothes, while completely decomposing flesh. It is not known when the bodies were originally interred, but the bones were all found as if they had been preserved in a museum; the hair remained upon the skull, and the clothes were but very little decayed.

Feeding Bees.

Put a pound of brown sugar in a low tin dish, wet it with water, and lay a number of small strips of wood across for the bees to rest on while at work. One pound of six cent sugar produces two pounds of honey.

LITERARY NOTICES.

LITTELL'S LIVING AGE—No. 3 of the new series of the above work has a most singular and able article on Saul of Tarsus; it appears to be from the pen of Rogers, the able theological writer of the Edinburgh Review. There are ten other articles in it of great excellence. Republished by Littell & Son, Boston.

BIBLIOTHECA SACRA—This able review is published at Andover, Mass., by W. F Draper & Brother, and is conducted by Prof. E. A. Park and S. H. Taylor, M. A The number for April contains many fine articles, and the conclusion of the interesting Autobiography of Dr. Karl Gottlieb Bretchschneider, an able German pastor and editor.

MECHANICS

Manufacturers and Inventors.

A new Volume of the SCIENTIFIC AMERICAN commences about the middle of September in each year. It is a journal of Scientific, Mechanical, and other improvements; the advocate of industry in all its various branches. It is published weekly in a form suitable for binding, and constitutes, at the end of each year, a splendid volume of over 400 pages, with a copious index, and from five to six hundred original engravings, together with a great amount of practical information concerning the progress of invention and discovery throughout the world.

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